28/9/78

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THE

NATURALIST:

A

MONTHLY JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND.

EDITED BY

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F.R.P.S.E.,

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WITH THE ASSISTANCE AS REFEREES IN SPECIAL DEPARTMENTS OF

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BRITISH MUSEUM NATURAL HISTORY

1902.

LONDON:

Lovell Reeve & Co., 6, Henrietta Street, Covent Garden, W.C.

Printed by Chorley & Pickersgill, The Electric Press, Leeds.

PREFACE.

The Editor has to thank the subscribers for their support and the contributors who have co-operated in the production of the present volume. Changes in the staff have been made. We have to mourn the decease of Mr. Charles P. Hobkirk, who has been so intimately associated with natural science and particularly with 'The Naturalist' for a great number of years. During the years 1864 to 1867 he was virtually its sole Editor, and from 1875 to 1884 he edited it in partnership with Mr. George T. Porritt.

Of papers in the present volume mention may be made of the descriptions of species of Fungi New to Science, the important article with plates of Harpidioid Hypna, and the Catalogues of Birds of Yorkshire and Lincolnshire and of Lincolnshire Non-Marine Mollusca, as being of more than local importance and appealing to a circle wider than that of the northern counties. The moss-paper embodies the fruits of important recent researches, the bird-list is the only one published in Britain strictly in accordance with the law of priority as to nomenclature, and the molluscan list is the first to set forth in Britain the views of modern malacologists as to the sequence of the species.

So much for the current volume.

There now remains for the Editor to announce that with the present number comes to an end his responsibility for a journal which he has either alone or in alliance with others conducted for eighteen years and a half. The volumes from August 1884 to the end of 1888 were edited in conjunction with Mr. W. Eagle Clarke, now of the Edinburgh Museum, and that for 1892 in partnership with Mr. Edgar R. Waite, now of the Australian Museum at Sydney, each of whom was a colleague whose valuable and harmonious co-operation can never be forgotten.

Other friends have co-operated as referees or associate editors in the preparation of the volumes, viz., Messrs. J. Gilbert Baker,

W. Eagle Clarke, Alfred Harker, C. P. Hobkirk, G. T. Porritt, and W. Barwell Turner from 1889, Mr. John W. Taylor from 1900, and Mr. T. Sheppard in 1902, and to each and all of them warmest thanks are due and offered.

To the contributors also, so numerous as to preclude any singling out of names of the living, thanks are also rendered, but as regards those who have passed away, it is due to the memory of Mr. John Cordeaux to recall how firm and staunch a friend and prolific a contributor he was to the very end of his useful life.

It will not be out of place here to mention the excellent manner in which the magazine has always been printed, first by Messrs. McCorquodale & Co. Ltd. and of late years by Messrs. Chorley & Pickersgill, to both of which firms the Editors have throughout been indebted for every consideration and assistance. In this connection it has been to the advantage of the magazine that the same persons—Mr. Chorley himself, Mr. W. Howard, and Mr. W. Sykes—have had charge of the printing of the journal throughout the whole period of eighteen and a half years of the present Editor's tenure of office.

As regards its spirit, 'The Naturalist' has always been—and intended to be—a scientific journal, dealing with every branch of the natural sciences capable of local application, and its great value is as a record of facts and a repertory of material calculated to be of use to students and investigators of the natural history and physical features of the eleven northern counties of England to which its scope is restricted.

In future 'The Naturalist' will be under the joint editorship of Mr. Thomas Sheppard, F.G.S., of the Municipal Museum at Hull, and Mr. Thomas W. Woodhead, F.L.S., of the Technical College at Huddersfield, and their reputation for ability and experience affords ample guarantee that the scientific standing of the journal will in no way be impaired.

JANUARY 1902. (Published 1st January 1902).

No. 540. (No. 318 of current series.)

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LONDON:

Lovell Reeve & Co. Ltd., 6, Henrietta Street, Covent Garden, W.C.

Chorley & Pickersgill, The Electric Press, Cookridge Street, Leeds.

PRICE SIXPENCE NET. BY POST SEVENPENCE.

Annual Subscription 6s. 6d. post free; through Booksellers, 6s. Net.

THE NATURALIST.

SUBSCRIPTIONS to this journal are for the Whole Calendar Year.

DISCONTINUANCE Notices do not take effect till the End of the Year during which they are received.

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NOMENCLATURE RULES.—The Nomenclature adopted in 'The Naturalist' will be—as far as possible—in accordance with the latest standard list or monograph, with such alterations as are necessary to bring the name into accordance with the strict law of priority.

CAPITALISATION OF SPECIFIC NAMES.—Hitherto the rule of 'The Naturalist' has been the Zoological one, that specific names shall invariably commence with a small letter, never with capitals. Henceforth this rule will still apply to all Zoological names, but in deference to the wishes of our botanical contributors the specific names of plants will conform in this respect to the standard catalogue or monograph in each branch of botany.

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G. H. F. Nuttall and A. E. Shipley.—Studies in Relation to Malaria, II. continued, 4to. reprint, Oct. 1901. [Authors.
Plymouth Institution.—Ann. Rep. and Trans., Vol. 12, Part 4. 1897-8. [The Inst.
G. Frank Knight.—Marine Mollusca and Brachiopoda [of Clyde area], 8vo. reprint, 1901. [Author.
Knowledge Diary and Scientific Handbook for 1902. [Publ. of Knowledge.

Duplicate Lepidoptera.—*Hesperia lineola*, from Essex. Wanted, local Butterflies.—W. R. HAYWARD, Sawbridgeworth, Herts.

For Sale or Exchange: Tempère's Diatomees du Monde Entier. A collection of 625 Slides, each described in printed Catalogue. Very scarce. Cost £25. —F. W. MILLS, Thornleigh, Huddersfield.

THE NATURALIST
FOR 1902.

NEW YORKSHIRE AGARICS.

GEORGE MASSEE, F.L.S., F.R.H.S.,
Royal Herbarium, Kew; Chairman of the Yorkshire Mycological Committee.
AND
CHARLES CROSSLAND, F.L.S.,
Halifax; Hon. Sec. Yorkshire Mycological Committee.

Mycena cinerea Mass. & Crossl. (sp. nov.).

Entirely grey or dull lead colour; smell strong, resembling radishes. Pileus 1·5-2 cm., slightly gibbous or obtuse, soon expanded, margin striate, paler and silky when dry; gills adnate, rather distant, mealy with the spores, edge paler; spores elliptical, smooth, white, 8 × 5 μ, cystidia fusiform; stem 5-7 cm. long, slender, cylindrical, glabrous, fistulose, base downy, white.

Among short grass. First collected at Selby, Yorks., afterwards met with at Louth, Lincs., and at Kew, Surrey.

Apparently not uncommon, and probably passed over as *M. metata* Fr., which differs in the absence of smell, and white gills. Most nearly allied to *M. plumbea* Fr., recently found in this country; the latter, however, differs in the sulcate pileus, white apex of stem, and absence of smell.

Coprinus Gibbsii Mass. & Crossl. (sp. nov.).

Very minute, 0·5 mm., hemispherical then expanded, striate, glabrous, minutely atomate, pale ochraceous, disc darkest; gills adnate, 5-7 in number; spores subcircular, compressed, smooth, purplish-brown, 8-9 μ diam., 5 μ thick; cystidia broadly piriform, 40 × 25 μ; stem 4-7 mm. long, very slender, white, pellucid, glabrous, attached by a few white strands of mycelium.

On horse-dung. Near Sheffield, collected by Mr. T. Gibbs, November 1901.

Probably the smallest Agaric known. Differs from its nearest ally, *C. radiatus* Berk., which also occurred in profusion on the same substratum, by its smaller size, glabrous pileus and stem, and more especially in its circular, compressed spores.

Psilocybe helvola (Schæff.).

Pileus 2-4 cm., campanulate then expanded and obtuse, even, glabrous, tawny-ochraceous, disc darkest, the cuticle often cracked into patches near the disc; flesh thin except at the disc, pallid; gills adnate then separating from the stem, broad, rather distant, purplish-umber, clouded, edge white; spores obliquely elliptical, ends pointed, warted, purplish-brown, 9-10 × 5-6 μ; stem 4-6 cm. long, 3-4 mm. thick, equal, hollow, fibrillose, often twisted, white or tinged ochraceous, base thickened, downy, white.

On the ground among grass. Cadeby, Yorks, Y.N.U. Fungus Foray, September 1901.

This fungus is exactly *Agaricus helvolus* Schæffer, pl. 210, and differs from all known species of *Psilocybe* in the peculiarly-shaped, warted spores. The habit is that of *P. sarcocephala,* but sufficiently distinct in the very broad, adnate gills and the spores.

As a personal matter on the part of one of us, I take this opportunity of correcting an error—one only out of many, I fear—that I committed in my 'Fungus Flora.' Fries, in describing *Lactarius vellereus,* states that the milk, characteristic of the genus, is sometimes absent in this species, and gives as a synonym *Agaricus exsuccus* Pers., which he considered as the milkless form of *L. vellereus.* The variety differs not only from *L. vellereus* in the absence of milk, but also in having the gills and a zone round the apex of the stem tinged with green. The spores are pure white. Of late years many Continental and British mycologists have come to consider this milkless, green-gilled fungus—*Lactarius exsuccus,* of Otto, W. G. Smith, and others—as the true *Russula delica* Fries. Dr. Cooke did not agree with this decision, and expressed his reasons for not doing so in 'Grevillea,' XVI., 65. Unfortunately I followed the general opinion, instead of remembering the old adage 'experto crede,' and described the green-gilled fungus as *Russula delica* Fr.

Now the Abbe Bresadola, an eminent Italian mycologist, who has paid special attention to this subject, has shown, I trust convincingly, by means of figures, references to literature, etc., that the milkless, green-gilled fungus is the *Agaricus chloroides* Krombh., and, furthermore, that it is quite distinct from *Russula delica* Fries; differing in its larger size, pubescent pileus and stem, and in the glaucous-green tinge of the gills.

As the only difference between *Lactarius* and *Russula* consists in the absence of milk in the latter, the green-gilled fungus will henceforth be known as *Russula chloroides* (Krombh.) Bresadola.

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CONTRIBUTION TOWARDS THE ENTOMOLOGY OF AMBLESIDE.

GEO. T. PORRITT, F.L.S., F.E.S.,
Crosland Hall, near Huddersfield.

From 5th to 12th June last, I enjoyed a very pleasant week's collecting at Ambleside and its immediate neighbourhood, the rivers Rothay and Brathay receiving perhaps the largest share of attention. In so essentially a water district the Trichoptera and aquatic Neuroptera were much in evidence, and a good deal of time was devoted to them. As on our Yorkshire rivers of similar character the Odonata were unaccountably ill represented, and the only two species taken were the fine *Cordulegaster annulatus* at Grasmere, and the small but equally pretty *Agrion cyathigerum*. Of Perlidæ the big species of *Perla* were common on the Rothay; I think both *P. maxima* and *P. cephalotes* (as is the case on the Wharfe in Yorkshire), but as I do not appear to have retained any of the specimens, as I ought to have done, I cannot speak with absolute certainty on such closely-allied insects. *Chloroperla grammatica, Isopteryx torrentium, I. tripunctata,* and *Nemoura cinerea* were all plentiful on the rivers and streams. *Chrysopa alba* abounded in Milbeckstock Wood, Bowness, where also an odd *C. vittata* was noted, but neither species was seen elsewhere. Of Trichoptera *Ecclisopteryx guttulata* swarmed on all the streams and rivers, and excepting perhaps *Agapetus comatus,* on Rothay river, was the most abundant species. *Gœra pilosa,* however, did not come very far behind the two in point of numbers; and on the side of Lake Windermere, at the Ambleside end, *Lepidostoma hirta* was in profusion. The other species included *Phryganea striata, Limnophilus rhombicus, L. auricula,* and *L. extricatus, Silo pallipes, Mystacides azurea, Hydropsyche instabilis, Plectrocnemia conspersa, Polycentropus flavomaculatus, Tinodes wæneri, Rhyacophila dorsalis, Glossosoma vernale,* and *Sericostoma personatum.* But little interest was taken in lepidoptera, but the always attractively beautiful *Melanthia albicillata* forced itself on attention from its numbers almost wherever one went. *Apamea unanimis* was abundant at the head of Lake Windermere; *Corycia temerata, Asthena luteata, Halias prasinana,* the yellow variety of *Cidaria russata* (*comma-notata*) which in my experience is rarely met with in the north, though frequent in the south;

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Cymatophora duplaris, etc., etc. Among various Coleoptera *Saperda populnea* was beaten out on the Brathay river. It may be added that the special object of my visit to the district, *Drepanopteryx phalænoides*, which has on several occasions been taken there in odd specimens, unfortunately completely baffled me, and I could find no trace of it.

NOTES on VERNACULAR PLANT-NAMES.

Vernacular Names and Folk Lore.—Editorially we may perhaps be allowed to say that much of the interest and value of notes on vernacular names and folk-lore is lost for want of geographical precision. We not only require to know what names are used, but in what particular districts or localities, and whether by real natives or passing visitors. Scientific precision as to names of species, and phonetic or orthographical precision, are also considerations to be borne in mind.

We shall be glad to insert notes on these topics, especially if districts are indicated with more minute precision than 'Yorkshire,' 'Northern Counties,' etc.—Eds. Nat.

Plant-Names and Folk-Lore in the North of England: 'Mother-Die,' etc.—The notes in 'The Naturalist' by Mr. Booth (p. 229) and Mr. Wattam (p. 268) on the local name 'Mother-Die' were interesting to me, and as I can add a little more regarding the name, perhaps it may prove acceptable and interesting to others. I have never heard the name 'Mother Die' applied to either *Anthriscus sylvestris* (Wild Beaked Parsley) or *Stellaria holostea* (Greater Stitchwort) in the North of England, but the same name under the local provincialism of 'Mother-Dee' is given in Cumberland ('dee' being the north-country pronunciation of 'die') to the Red Campion (*Lychnis diurna*), in which county exists the similar superstition referred to by Mr. Booth—that if the flower be plucked some serious misfortune will happen to 'mother.' This local name and piece of folk-lore are connected with different plants in different counties. In Cumberland it is—as stated above—the Red Campion (*Lychnis diurna*); in Essex, the Hawthorn (*Cratægus oxyacantha*); in Gloucestershire, the Purple Orchis (*Orchis mascula*); in Norfolk, the autumn Apple Flower; and in Yorkshire, the Germander Speedwell (*Veronica chamædrys*). The flowers of any of these plants, if pulled by a child and taken into the house, in certain parts of the above counties, are said to bring either some serious misfortune, or illness, or death to one of the parents.—J. W. Fawcett, Satley, Darlington, 6th September 1901.

Plant-Names in the North of England.—Messrs. Booth and Wattam, in 'The Naturalist,' pp. 229 and 268, give some Lincolnshire and Yorkshire names of two different plants. It may interest them and others that the following is a list of local names which I have heard applied to the same plants:—

Anthriscus sylvestris (Wild Beaked Parsley). 'Hemlock,' 'Humlick,' 'Humlock,' 'Kellick' (in South Durham), 'Kelks' (ibid), 'Kelksies' (ibid), and 'Rabbit Meat.'

Stellaria holostea (Greater Stitchwort). 'Adder's Meat,' 'Satin Flower,' 'Thunder Flower' (in Cumberland), 'White Star Flower.'

Lychnis diurna (Red Campion). 'Red Catchfly,' 'Red Robin,' 'Mother-Dee' (in Cumberland), 'Scarlet Campion.'

Perhaps other readers could make additions.—J. W. Fawcett, Satley, Darlington, 6th September 1901.

ADDITIONAL NOTES TO THE FLORA OF DERBYSHIRE.

Rev. W. H. PAINTER,

Stirchley Rectory, near Shifnal, Corresponding Member of the Birmingham Natural History and Philosophical Society, and of the Birmingham Microscopists' and Naturalists' Union.

My attention has been recently called to several errors in 'The Supplement to the Derbyshire Flora,' which appeared in this magazine in 1899, for some of which my correspondents are responsible, whilst the blame for others attaches to myself.

These errors I wish to correct in the following pages; and whilst doing this I will add to the records which have been already given, thus bringing the records of the Derbyshire Flora down to the present year.

These records, it will be seen, have been almost, if not entirely, drawn from the Reports of the Exchange Club for the British Isles, the Watson Exchange Club, and the Moss Exchange Club; and therefore it will be understood that those Reports are answerable for any inaccuracies that may be discovered later on respecting the habitats given for Phænogamous Plants and Mosses.

In the 'Supplement' before mentioned some sources of information were unfortunately not acknowledged. 'The Natural History of Tutbury,' which contains an account of the Mosses of South Derbyshire, should have been mentioned, though I have not had an opportunity of consulting it. The 'Naturalist' for 1886, which contains Mr. Whitehead's *original* list of North Derbyshire Mosses, should also have been mentioned, as well as the kindness of the Revs. R. C. Bindley, M.A., and A. Ley, M.A., in furnishing me with Lists of the Mosses seen by them in the county.

I desire to point out that '*J. W.* in Whitehead' represents in every case Mr. Whitehead himself.

A few localities have been given me as being in Derbyshire which are in other counties; e.g., Shireoaks (Supp., p. 200, etc.) is in Nottinghamshire; whilst Woodville (Ib., p. 179) and R. Dove, Uttoxeter (Ib., p. 192) are in Staffordshire.

FLOWERING PLANTS.

New. ***Ranunculus tricophyllus*** Chaix.

III. Chellaston, growing partly in water and partly in mud, *Linton,* B. Exch. Cl. Report, p. 509.

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Ranunculus Flammula L. var. ***serratus*** DC.
Stout, erect form.
I. Rowarth, *Linton,* B.E.C. Rep., p. 564.

18. ***Ranunculus auricomus*** L. forma.
III. Near Barton Blount, *Linton,* B. E. C. Rep., p. 536.

New. ***Erophila stenocarpa*** Jord.
I. Brassington Rocks, *Linton,* B.E.C. Rep., p. 621.

Brassica Rapa L. var. ***sylvestris*** H.C.Watson. Page 22.
III. Near Mayfield, *Linton,* B.E.C. Rep., p. 469.

Viola ericetorum + ***Riviana.***
III. Shirley Park, *Linton,* B.E.C. Rep., p. 622.

Polygala oxyptera Reichb. Page 24.
II. Fritchley, *Linton,* B.E.C. Rep., p. 624.

New. ***Sagina apetala*** L. var. ***glabra*** F.Schultz.
II. Ambergate, *Linton,* B.E.C. Rep., p. 625.

New. ***Arenaria serpyllifolia*** L. var. ***glutinosa*** Koch.
I. Castleton, *Linton,* B.E.C. Rep., p. 511.

184. ***Stellaria nemorum*** L. Page 28.
III. Ecclesbourne Brook, *Linton,* B.E.C. Rep., p. 471.

New. ***Rubus erythrinus*** Genev.
I. Holymoorside, *Linton,* B.E.C. Rep., p. 627.

Rubus durescens W.R.Linton. Supp.
II. Rev. W. R. Linton says 'Pincham's Hill,' not 'Pondarus Wood.' Belper. *E. F. Linton.*

Rubus dumnoniensis Bab. not *damnoniensis* as in Supp.

Rubus argentatus P.J.Muell.

Var. ***robustus*** (P.J.Muell.). Supp.
Rev. W. R. Linton says the last clause in this paragraph is wrong.

Rubus macrophyllus W.&N.

New. Var. ***Schlechtendalii*** (Weihe).
III. Spinnyford Brook, near Hulland, *Linton.*

New. ***Rubus infestus*** Weihe.
I. Hathersage and Froggatt, *Linton,* B.E.C. Rep., p. 516.

II. Duffield, *Linton,* B.E.C. Rep., p. 477.

III. Yeaveley, *Linton,* B.E.C. Rep., p. 630.

Rubus anglosaxonicus Gelert. Page 46.

II. Kelstedge, near Ashover, *Linton,* B.E.C. Rep., p. 630.

VAR. ***raduloides*** Rogers. Suppl.

III. Spinnyford Brook, near Hulland, *Linton.*
The reference in the Supp. to B.E.C. Rep. should be to Watson E.C. Rep., 1900-1.

Rubus podophyllus P.J.Muell. Suppl.

I. Charlesworth, *Linton*, B.E.C. Rep., p. 478.

New. ***Rubus Babingtonii*** Bell Salt.

VAR. ***phyllothyrsus*** (Frider).

III. Shirley, *Linton.*

Rubus rosaceus W.&N. Page 46.

VAR. ***hystrix*** (W.&N.).

II. Between Harper Hill and Walton, Chesterfield, *Linton.* 'Here I feel some doubt between *R. hystrix* and *R. dasyphyllus.* It seems a somewhat intermediate form, though on the whole, I think nearer the latter' (W. Moyle Rogers in B.E.C. Rep., p. 632). *Rubus dasyphyllus* Rogers = *R. Koehleri* var. *pallidus* Bab.).

Rubus fusco-ater Weihe.

III. Cross o' th' Hands, Muggington, *Linton.*

Rubus dumetorum W.&N.

VAR. ***diversiflorus*** (Lindl.) Supp. should be *diversifolius.*

Rosa mollis Sm.

VAR. ***cærulea*** Woods. Supp.
Rev. W. R. Linton says this belongs to type.

Rosa mollis + spinosissima.

I. Chee Dale, *E. F. Linton,* B.E.C. Rep., p. 575.
Miller's Dale, *Linton,* B.E.C. Rep., p. 575.

Rosa tomentosa Smith. Supp.

III. For Manshull Park read Manskell Park.

Rosa obtusifolia Desv. var. ***tomentella*** (Leman).
Not *Rosa sepium* Thuill. as in Supp.

New. ***Alchemilla vulgaris*** L. var. ***filicaulis*** (Buver).
III. Shirley and neighbourhood, *Linton,* B.E.C. Rep., p. 481.

Cratægus oxyacanthoides + monogyna.
I. Miller's Dale, *Linton,* B.E.C. Rep., p. 575.

Epilobium hirsutum + montanum.
I. Mytham Bridge, *Linton,* B.E.C. Rep., p. 520.

Epilobium obscurum + palustre.
I. Chapel-en-le-Frith, *Linton,* B.E.C. Rep., p. 576.

Hieracium britannicum F.J.Hanb. Supp.
I. Dale between Cressbrook Dale and Litton, *Linton,* B.E.C., Rep., p. 579.

New. ***Hieracium murorum*** L. var. ***lepistodes*** Johanss.
I. Limestone dales near Buxton, *Ley,* B.E.C. Rep., p. 575; Ashwood Dale, *Linton,* B.E.C. Rep., p. 579.

Hieracium pallidum Fries. Supp.
The forms which used to come under this name have now been divided among several species.

Hieracium holophyllum W.R.Linton. Supp.
I. Cressbrook Dale, *J. C. Melvill,* B.E.C. Rep., p. 579.

Hieracium diaphanoides Lindb. Supp.
For Woanhill read Wormhill.

594. ***Serratula tinctoria*** L.
For Barnaston read Burnaston.

New. ***Taraxacum officinale*** L. var. ***corniculatum*** DC.
III. Near Shirley on limestone, possibly a limestone form of var. *erythrospermum* Andrz., *Linton,* B.E.C. Rep., p. 486.

Carduus (Cnicus) pratensis Willd. Supp.
III. Willington, Bindley, B.E.C. Rep., p. 452.

665. ***Matricaria Chamomilla*** L. Page 80.
Apetalous form.
I. Edale, *Linton,* B.E.C. Rep., p. 521.
III. Cubley, *Linton,* B.E.C. Rep., p. 521.

Euphrasia nemorosa H.Mart.
II. Near Barlborough and near Woolley, Ashover Hay, *Linton,* B.E.C. Rep., p. 641.

New. ***Melampyrum pratense*** L. var. ***hians*** Druce.
I. Ashopton, *Linton,* B.E.C. Rep., p. 421.

New. ***Mentha sylvestris*** L. (***longifolia*** Huds.) var. ***nemorosa*** Willd.
III. Marston Montgomery, *H. Bromwich,* B.E.C. Rep., p. 566.

805. ***Mentha piperita*** Huds.
For Snelstone read Snelston.

New. ***Mentha gracilis*** L.
I. Chee Dale, *Linton,* B.E.C. Rep., p. 527.

Galeopsis intermedium Sill.
Now placed under *G. Ladanum* L.
For Bolsover read 'near Bolsover.'

Salix aurita + cinerea. Supp.
III. Yeldersley and Edlaston Coppy, *Linton,* B.E.C. Rep., pp. 528, 564.

Salix caprea + cinerea.
III. Edlaston Coppy, *Linton,* B.E.C. Rep., p. 528.

New. ***Epipactis atrorubens*** Schultz.
I. Longstone Edge, *Linton,* B.E.C. Rep., p. 598.

New. ***Allium oleraceum*** L.
II. Canal side near Long Eaton, *Linton*, B.E.C. Rep., p. 567.

New. ***Potamogeton compressus*** L. (*P. Friesii* Rupr.).
III. Near Derby, *Linton,* B.E.C. Rep., p. 497.

Potamogeton crispus + perfoliatus = P. Cooperi Fryer.
III. Canals, near Derby, *Linton,* B.E.C. Rep., p. 646.

Potamogeton crispus + Friesii = P. Lintoni Fryer.
II. Canal, Renishaw, *Linton,* B.E.C. Rep., p. 646.

1182. ***Blysmus compressus*** Panz. (*Scirpus Caricis* Retz.). Page 122.
I. Dove Dale, *Painter.*

1211. ***Carex ovalis*** Good. var. ***bracteata.*** Page 124.
An error. It is *Blysmus compressus.*

1224. ***Carex paniculata*** L. Page 115.
III. Shirley, *Linton,* B.E.C. Rep., p. 426.

Alopecurus fulvus Sm.
II. Sutton Scarsdale Park, *Linton*, B.E.C. Rep., p. 650.

New ***Alopecurus geniculatus*** L. var. ***pronus*** Mitt.
I. Bradwell Old Moor, *Linton,* B.E.C. Rep., p. 530.

New. ***Glyceria plicata*** Fr. var. ***declinata*** (Breb.).
I. Bradwell Old Moor, *Linton,* B.E.C. Rep., p. 531.

1421. ***Equisetum maximum*** Lam. not *E. umbrosum.*
Seen growing by Rev. W. R. Linton in this habitat.

MOSSES.

21. ***Weissia mucronata*** Bruch.
This entry should be cancelled. There is considerable doubt if this moss has been found in the county. I have not seen a specimen.—AUTHOR.

34. ***Dicranum palustre*** Bry. Eur. (*D. Bonjeani* DeNot.).
I. Charlesworth and Kinder Scout, *Whitehead*; Erwood, near Buxton, 1874, *Ley.* Not as in Supp.

38. ***Campylopus flexuosus*** Wils. var. ***paradoxus*** Husn.
I. Kinder Scout, *J. Whitehead,* comm., *Prof. Barker,* p. 44.*

47. ***Seligeria pusilla*** Hedw.
I. Near Bradwell, *Linton,* p. 75.

48. ***Seligeria acutifolia*** Lindb.
The entry in the Supp. is misleading. The type does not grow in Great Britain, Dixon and Jameson's 'Handbook of British Mosses.' The entry should therefore be placed under the var.

51. ***Seligeria recurvata*** Hedw.
I. Near the Snake Inn, Kinder Scout, *Linton,* p. 75.

100. ***Distichium capillaceum*** L. not *Distichum capillacum* as in Supp.

129. ***Ephemerum serratum*** Schreb. not *Epherum* as in Supp.

141. ***Webera cucullata*** Schp.
Mr. Whitehead's remark 'New to England' was unfortunately omitted in Supp. This moss appears in 'Dixon and Jameson' as a subspecies of *Webera nutans* Hedw.

148. ***Bryum pendulum*** Schf.
I. Wall, Castleton, *H. N. Dixon,* p. 54.

174. ***Tetradontium Brownianum*** Dicks.
This should read *Tetrodontium.*

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* Moss Exchange Club Reports. The pages only are given in the entries.

183. ***Polytrichum piliferum*** Schreb.
For Raworth in J. W. read Roworth.

201. ***Fontinalis squamosa*** L.
I. Fairbrook, *Linton*, p. 85.

Fontinalis Dixoni Card.
I. Chatsworth, *Parker*, p. 17.

205. ***Neckera crispa*** L. var. ***falcata*** Boulay.
I. Deepdale, Buxton, *Prof. Barker*, p. 85.

209. ***Leskea polycarpa*** Ehrh.
For Anchor Church, Mickleover, read Anchor Church; Mickleover.

215. ***Thamnium alopecurum*** L.
For Dirmin Dale read Diminsdale.

217. ***Climacium dendroides*** W.&N.
I. Stirrup Wood, Ludworth, *E. Clough*, p. 56.

New. ***Amblystegium Sprucei*** B.&S.
I. Dove Holes, Dovedale, *Prof. Barker*, p. 36, who writes: 'To an early distribution (of the Club) I sent several packets labelled *A. confervoides*, Dove Holes, Dovedale, Derbyshire. A recent examination of what remained of my gathering proved the moss to be *A. Sprucei*. . . . I called it *A. confervoides* in deference to the opinion of the late Mr. Whitehead.'

252. ***Amblystegium confervoides*** Brid.
I. Dr. Frazer's habitat of this moss is in *Staffordshire*.

HEPATICS.

Asterella hemispherica (L.). (*Reboulia hemispherica* L.)
I. Monk's Dale; Cressbrook Dale; Peak Forest; Lathkill Dale; Hartle Dale, Bradwell, *Linton*, p. 42.

Targionia hypophylla L.
I. Dovedale, *Linton*, pp. 42, 63.

Trichocolea tomentella Ehrh.
I. Umberley Brook, Chatsworth, *Linton*, p. 60.

Scapania irrigua Nees.
III. Hulland Moss, *Linton*, p. 61.

Scapania æquiloba Schwæg. f. *dentata* (Gottsche & Bab.) (*S. aspera* Müll. and Bernh.).
I. Near Ashford, *Linton*, p. 95.

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Mylia anomala Hook.
I. Baslow, *Linton*, p. 95.

Jungermannia sphærocarpa Hook.
I. Coombes Moss; Jarvis Clough, Ashopton; Barbrook; Baslow; Ashop Clough; Kinder Scout, *Linton*, pp. 40, 62, and 96.

Jungermannia riparia Tayl.
I. Cressbrook Dale, *Linton*, p. 18.

Jungermannia Bantriensis Hook. var. ***Mulleri*** Nees.
I. Brassington Rocks; Ashwood Dale, *Linton*, pp. 62 and 96.

Jungermannia attenuata Lindenberg (*J. gracilis* Schleich.).
I. Froggatt; Edale; Hathersage; Birchen Edge, Baslow, *Linton*, pp. 41 and 96.

Jungermannia Floerkii W.&N.
I. Coombes Moss and six other localities, *Linton*, p. 62.

Jungermannia quinquedentata Web. (*Lyoni* Tayl.).
I. Monk's Dale, *Linton*, p. 96.

Jungermannia ventricosa Dicks.
I. Hartland Edge, near Beeby; Baslow, *Linton*, p. 41.

Jungermannia alpestris Schleich.
I. Deep Dale, Buxton; near Taddington; Great Shacklow Wood, Ashford; Brassington Rocks, and Bradwell, *Linton*, pp. 19 and 41.

Jungermannia turbinata Raddi.
I. Great Shacklow Wood, Ashford; Cressbrook Dale; Conies Dale, *Linton*, p. 41.

Nardia compressa Gray.
I. Edale, *Linton*, p. 40.

Fossombronia pusilla Nees.
I. Bradley, *Linton*, p. 42.

Aneura pinguis L.
III. Yeldersley, *Linton*, p. 42.

Aneura sinuata Dicks.
I. Waterfall, Froggatt, *Linton*, p. 63.

LINCOLNSHIRE WATER MITES:
THIRD LIST.

C. F. GEORGE, M.R.C.S., etc.,
Kirton-in-Lindsey, Lincolnshire.

SINCE my last paper on Water Mites, published in 'The Naturalist,' May 1901, there has appeared in Germany a most important work on this subject, a volume forming the 13th 'Lieferung' of an extensive work called 'Das Tierreich.' It deals with the Hydrachnidæ and Halacaridæ of the world. The Hydrachnidæ is written by Dr. R. Piersig, of Annaberg, who gives a list of all the literature of the Hydrachnidæ known to him in any language, brought up to the 15th of April 1901, and a description of every Water Mite certainly known, also very accurate and laborious analytical tables of the genera and species. Considerable alterations are made in the classification which will require the careful attention of the student; for instance, the generic name *Laminipes* has been given to mites hitherto known as *Piona, Neumania* instead of *Cochleophorus,* and *Piona* is substituted for *Curvipes.* From what I have said some little idea may be formed of the great value of this book to the hydrachnologist and the immense labour and learning bestowed upon it.

The year has not been to me a very successful one in some respects, still I have a few more species to add to my Lincolnshire list, which have all been taken by myself in the same district as the former ones.

Eulais (Eylais) georgei (Soar). See 'Science Gossip,' August 1901, pp. 68 and 69. This species is the one described in my first list as *Eylais extendens.* I circulated a mounted specimen (which I still possess) in the Postal Microscopical Society in November 1882, but it is needless to say it returned without any important remark or criticism. In 1896 Professor Kœnike, of Bremen, published some observations on *Eylais* which gave a great impetus to the study of this genus over the whole world, so that Dr. Piersig now describes no less than 35 species as certain, mentions two as uncertain, and one as a variety, and yet had not recorded this species, as it was only described by Mr. Soar in August 1901; and I have about half-a-dozen different species or varieties, taken and mounted by myself this year, whose

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names I have not yet determined to my satisfaction. These names I hope to publish in a future communication.

Hydrachna scutata (Piersig). See 'Science Gossip' for August 1900, p. 338.

Hydrachna thoni (Piersig). Nymph.

Hydrachna biscutata (Thon.).

Hydrachna conjecta (Kœnike).

Hydrachna sp. not yet determined.

I know of no English figures of the last four mites yet published. Like the preceding genus, *Hydrachna* has been much studied during the last few years, and many species described. In 1842 Koch published his 'Übersicht' naming only three species, whilst Piersig in his work, published in June last, describes as certain 33, as uncertain five, and one as a variety.

Oxus ovalis (Müll.).

Hygrobates reticulatus (Kramer). See 'Science Gossip,' October 1899.

Atax ypsilophorus (Bouz.). I have long been morally certain that this was a Lincolnshire species, but on 5th September last I found two specimens of *Anodonta cygnea* on the mud at the side of a pond; one was dead, the other still alive, and in each mollusc I found several specimens of this mite. Its parasitic nature causes it to be seldom observed, but it is common enough doubtless when looked for in the right place.

NOTE on LINCOLNSHIRE HEMIPTERA.

***Verlusia rhombea* at Mablethorpe.**—A Bug, captured on the sand-hills at Mablethorpe a few days ago, has been identified by the Rev. A. Thornley as *Verlusia rhombea* L. All the localities for it given by Saunders are south of London.—C. E. Playll, Louth, 3rd September 1901.

NOTE on LINCOLNSHIRE MAMMALS.

White Hares near Horncastle, Linc. N.—A white Hare (*Lepus europæus*) has been recently shot near here. These are not accidental cases of albino hares, but a strain, which crops up periodically, generally with eyes of the ordinary colour. They are, for the most part, confined to this neighbourhood, but have, at intervals, to my knowledge, been seen for more than thirty years. It is three years, I think, since the last was shot in Tumby Wood. In 'The Field' of 11th June 1898, Mr. Fieldsend mentioned one, which I presented to our Museum at Lincoln Castle, and which had dark eyes. In the same communication he mentioned fifteen other similar instances.—J. Conway Walter, Langton Rectory, Horncastle, 14th October 1901.

YORKSHIRE NATURALISTS' UNION AT MASHAM.

THOMAS GIBBS,
43, St. Ronan's Road, Sheffield.

THE fourth excursion of the season 1901 was the popular August Bank Holiday meeting, and was held this year at the quaint little town of Masham, situated near the junction of the river Burn with the Ure, just within the southern boundary of the North Riding.

The district marked out in the programme for exploration was Colsterdale, the valley of the Burn, Birk Gill, and Arnagill, but time allowed only of a portion of this district being visited, members finding that the examination of Birk Gill and Colsterdale was enough for a good day's work on the Monday, while the rest of the time was profitably spent in the woods and fields in the immediate vicinity of Masham and Swinton.

A previous excursion of the Union to Tanfield and Hackfall in April 1896 very nearly approached the ground worked on this occasion, but the later party did not reach quite as far south as Hackfall, the western-most limit of the earlier excursion.

The area proposed to be explored was therefore practically virgin soil to the Union, and the programme rightly drew attention to this fact, so that its little-known fauna and flora might be as thoroughly investigated as the time would allow. This was especially desirable, as some of the most interesting of the river valleys are to be submerged as part of a new water scheme of the Leeds Corporation.

Work commenced on Saturday morning, 3rd August, when a few members under the guidance of Mr. William Forbes, Lord Masham's head forester, had a pleasant ramble in the neighbourhood of Swinton Park and the well-wooded banks of the Burn. The estate nurseries were also visited, and here, under the guidance of an expert, the visitors could see how the rearing and care of timber can be carried on by men conversant with the best methods of scientific forestry. Other short rambles by the week-end visitors were southwards to Nutwith Cote and the woods in the vicinity of Hackfall, and northwards along the bank of the Ure towards High Burton.

With Monday morning's train came a considerable addition to the party, bringing up their number to nearly thirty, including representatives of several sections previously unrepresented.

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As Birk Gill, the locality chosen for the day's work, was several miles distant, carriages were requisitioned for the scene of action; in these the general body of naturalists, including zoologists, phanerogamic botanists, and geologists, were taken as far as Gollinglith Foot, while the two mycologists present considered it more profitable to spend the day in the woods nearer home, and were dropped at the Saw Mill, near Healey, for the purpose of exploring the Hall Wood.

Birk Gill is a narrow glen, the steep banks of which are clothed with deciduous wood of luxuriant growth, and with an undergrowth of equally luxuriant fern; on the left of the stream rise banks of shale and millstone grit cliffs, not of great height, but clothed with abundance of foliage and underwood. About two miles up the glen there is a fine fall of some twenty feet, the stream here making a bend to the left; above the fall the woods continue for some distance, but there are no more cliffs.

The following reports show the work done by the different sections:—

Mr. Kenneth McLean (secretary), writes as to the Vertebrata:—He stated that the representatives of the Vertebrate Section are somewhat at a disadvantage when on these excursions. The objects of their pursuit, unlike the geological and botanical specimens, are movable; some of them very movable. Consequently the greater number of people and the greater noise, the less chance there is of observing bird and animal life; quiet going and quiet waiting are absolutely necessary to see, hear, and study these to advantage.

This excursion, however, from an ornithological point of view especially, was on the whole a very satisfactory one, although nothing very rare was seen. Yet the great variety of birds, and the great numbers of certain kinds, made the day full of interest.

Large numbers of Willow-Wrens, Whitethroats, and Sedge-Warblers flitted amongst the alders by the stream, and were joined by Cole Tits, Blue Tits, Wrens, Chaffinches, and many other common but interesting birds. All these were feeding upon insects of different kinds which were swarming near the water. Perhaps the summer visitors were being entertained by the residents at a sort of farewell picnic prior to their passing over to their winter homes. The Missel-Thrush on the grassy slopes were more numerous than he had seen them for

many years. A few years ago these birds, which are the first to suffer from severe weather, got so reduced in numbers by successive severe winters that for a year or two after their nests were few and far between. The Spotted Flycatcher and Redstart were fairly plentiful. Up near the edge of the moor many Blackbirds were accompanied by several of their near relations, the Ring-Ousel, some of them just beginning to show their white neckties. Many Red Grouse, too, had joined this party, evidently having the same object in view—to enjoy the glorious feast of cranberries spread out before them. Several of the semi-rare birds were observed. Glimpses were caught of the Kingfisher as he flashed down the stream, showing his rainbow hues; the Dipper, with his tail and beak looking upwards, bobbed on the stones in mid-stream; Mr. and Mrs. Bullfinch with their family, looking very bright and beautiful amongst the hazel bowers; the Green Woodpecker was heard, and its borings seen in many of the trees; and a young Cuckoo was receiving food from its little foster-mother, the Willow-Wren. The Carrion-Crow, Magpie, Sparrow-Hawk, Kestrel, of these only odd specimens were seen. During the day in all fifty-five kinds of birds were noted; this was considerably above the average number seen on these excursions.

The Mammalia had five representatives on the list, all common. Six kinds of Fish were seen, also common.

Mr. W. Denison Roebuck, who represented the Conchological Section in the absence of its officers, writes that in consequence of the dryness of the ground traversed the number of mollusca observed was not great. Mr. Edwin Hawkesworth commenced the work on Saturday, 3rd August, when he collected several specimens within small compass in a dampish spot in Swinton Park. These having been submitted to Mr. Wm. Nelson, proved to consist of the following species:—

Hyalinia alliaria. One, young.	Helix rotundata. Two.
Hyalinia pura. One, dead.	Pupa umbilicata. One.
Hyalinia radiatula. One, dead.	do. var. albina. One.
Hyalinia crystallina. Three.	Planorbis albus. Two.

The collecting on Monday, 5th August, yielded but few species. Mr. Roebuck worked down Colsterdale towards Masham, found *Agriolimax agrestis* at Gollinglith Foot, *Arion circumscriptus* near Healey, a broken fragment of *Helix aspersa* in a rubbish-heap at Healey, a single tiny specimen of *Ancylus fluviatilis* in the river Burn at Healey (the only one found after close and prolonged search), several examples of *Helix hispida*

at Healey and at Swinton, numerous *H. rotundata* at the latter village, and a very young example of *Limax maximus* under the bark of an oak log at Swinton. Messrs. C. Crossland, F.L.S., and Mr. Thomas Gibbs brought from the Hall Wood *Hyalinia crystallina, H. alliaria* (young), a pale greenish-white juvenile specimen of *Arion ater*, and a very small example of *Limax marginatus* (*arborum*) of typical markings but very dark. The last-named was of considerable interest in that from it emerged an extremely long thread-worm, evidently a parasite.

Mr. Roebuck next visited Marfield Pond under the guidance of Mr. J. J. Burton, who had visited the place the previous day, a fine large sheet of water, overgrown in the centre with vegetation, and its muddy verge so trodden down by cattle as to render it difficult to get to collect in the clear water which stood between the reeds and the edge. Here were found *Limnæa stagnalis* in great abundance and very large and fine, several *L. palustris, Planorbis corneus* in great abundance and of ordinary size, *Pl. complanatus* in great plenty and exceedingly fine, some of the specimens being as large as Mr. Nelson has seen, and *Bythinia tentaculata*, also in great plenty, besides a few examples of a *Pisidium* which were lost before they could be specifically identified. Most of the shells were covered with confervoid vegetation, except those collected at one or two points where it was evident the pond was fed by springs.

The total list thus amounted to twenty-one species and one albino variety—eight species being freshwater, eight land snails, and five slugs.

The Entomologists were solely represented by Mr. G. T. Porritt, F.L.S., and Bank Holiday train exigencies unfortunately prevented him from having more than a short afternoon's work; his report shows what good use he made of this short time; he says that the Entomologists were exceptionally fortunate. In a district almost unworked, containing so much water, it was natural that the Trichoptera should be in full force, and in less than two hours' work on the river Ure, in adverse weather conditions, Mr. G. T. Porritt succeeded in securing no less than five species hitherto unrecorded for Yorkshire, two of them being quite common; indeed one of them in great abundance. The new species were:—

Lepidostoma hirta, common.
Leptocerus albifrons.
Neureclipsis bimaculata.

Psychomyia pusilla, abundant.
Hydropsyche lepida.

Other Trichoptera noticed included *Leptocerus cinereus* and *Tinodes wæneri*, both common. Various species of Planipennia were taken and the Odonata included a fine *Æschna juncea,* a dragonfly apparently much rarer in Yorkshire than its near relative *Æ. cyanea.*

A striking feature of the excursion, too, was the extraordinary number of the fine Hymenopteron *Sirex gigas* which were seen near the saw mills at Healey, probably at least twenty specimens being seen which had recently been found in the timber used at the mills. Scarcely any attention was paid to the Lepidoptera, but *Mania maura, Melanthia rubiginata,* and other species were taken.

Mr. E. Snelgrove, B.A. (Sheffield), writes as follows on the Phanerogamic Botany :—The district examined by the botanists during the three days of the meeting extends along the south bank of the Ure, from two miles below Masham, up the Burn, which flows through Colsterdale, to Birk Gill. The records include 200 species of flowering plants, among which may be mentioned :—*Campanula latifolia, C. glomerata, Hypericum hirsutum, H. dubium, H. pulchrum, Geranium sylvaticum, Mimulus luteus, Primula farinosa, Parnassia palustris, Epipactis media, E. palustris, Gymnadenia conopsea, Listera ovata, Schœnus nigricans, Carex pendula, C. flava, C. panicea, C. paniculata, C. remota, Ononis spinosa, Pimpinella magna,* and *Rubus saxatilis.* In Birk Gill, *Drosera rotundifolia, Vaccinium oxycoccos.* Near Masham also *Actæa spicata* and *Saxifraga tridactylites.*

Amongst Cryptogams, *Equisetum palustre, E. sylvaticum, Lycopodium selago,* and an interesting list of ferns were recorded. For this last, Mr. J. E. Clark is responsible :—*Pteris aquilina, Lomaria spicant, Asplenium adiantum-nigrum, A. viride, A. ruta-muraria, Athyrium filix-fœmina, Polystichum lobatum, P. lobatum* var. *aculeatum, P. aculeatum* var. *lonchitidioides, Lastræa oreopteris, L. filix-mas, L. spinulosa, L. dilatata, L. æmula, Polypodium vulgare, Cystopteris fragilis, Phegopteris Dryopteris, P. polypodioides.* Most of these were found in Birk Gill. There was some remarkably fine *Peltigera canina* on the mosses of the moist cliffs. The flowering plants were done carefully, but it cannot be said that any serious attempt was made upon the mosses, hepaticæ, or lichens, for want of specialists. The Botanical party were much indebted to Mr. W. A. Thwaites, of Masham, for valuable guidance to suitable localities.

Since this report on Botany was drawn up Mr. J. F. Pickard informs me that, on going over his plants with Mr. F. Arnold Lees, he finds that *Festuca sylvatica* Vill. was among the plants of Birk Gill. It was growing sparingly on the steep left bank under the rocks, and as it is not recorded by Mr. Baker, it is an interesting addition to the North Riding Flora.

Mr. Crossland's report for the Mycological Section is included in his article on the 'Fungi of Masham and Swinton' in the present number of 'The Naturalist.' This course has been rendered necessary by the fortunate circumstance that two local men—Messrs. Forbes and Thwaites—were found who at once showed a keen and intelligent interest in the subject, and carried on their investigations through the autumn with the very creditable result shown in Mr. Crossland's article.

Mr. T. Sheppard, F.G.S., secretary of the Geological Section, writes:—'Owing probably to the fact that the district chosen for this excursion is not particularly attractive from a collector's point of view, the geologists were but meagrely represented, and the few who were present decided to join the 'general body' of naturalists. To say that the district was uninteresting, geologically, would be inaccurate, as many features were met with on the ramble which were of great interest to the hammer-men. There are a few impure seams of coal in the neighbourhood, and judging from the recently formed refuse heaps, some of these are still being worked. Birk Gill proved a charming locality, and in the shales exposed on its sides were ripple-marks, rain-pittings, and sun-cracks. The hammer, however, was but little required, and for once the geologists had light loads to bring home.

The proceedings closed with the usual sectional and general meetings, at the latter of which Mr. G. T. Porritt, F.L.S., presided, and 14 societies were represented. Two new members were elected, Mr. Wm. Forbes (Swinton) and Mr. Charles Harvey Colmar (Pickering); and the usual votes of thanks were accorded, and one of condolence with the relatives of the late Mr. John Burton, of Altofts, an old and valued member.

The weather throughout the excursion was fine, though dull and cool, the accommodation was excellent, the meeting as the reports show was a profitable one as regards the work done, and all left with pleasant recollections of Masham in August 1901.

FUNGI OF MASHAM AND SWINTON.

CHAS. CROSSLAND, F.L.S.,
Halifax ; Hon. Sec. Yorkshire Mycological Committee.

In the circular announcing the Bank Holiday meeting of the Yorkshire Naturalists' Union at Masham (August 3rd-5th), the paragraph headed 'Fungi' says :—'No records, but Mr. W. Forbes, Swinton, writes that Fungi are very abundant.' This combined statement acted as an incentive to a few Yorkshire mycologists to try and make a beginning. These were Messrs. J. Williams Sutcliffe, Halifax, Thomas Gibbs, Sheffield, and the writer. Unfortunately, although the excursion was a 'week-ender,' none of us were able to put in more than one full day. Two or three other members of the Union, notably Mr. John Naughton, of Harrogate, took a more than usual interest in this too-much-neglected, though very important, branch of natural history. We were indebted to Mr. Forbes for directing us to the most likely localities in which to meet with the objects of our search. This gentleman is arboriculturist on the estates of Lord Masham, and is personally familiar with every part of the extensive woods and plantations. His sylviculture is carried on upon the most approved scientific lines, and every effort is being made by him to minimise the attacks of parasitic fungi upon his trees and shrubs. In great stretches of woodland and plantation, principally of a mixed character, conifers often predominating, the trees were the very picture of health and active growth. There were one or two places where matters did not look so very promising, but he confidently asserted that he would soon have all right, even there. The places we found best, from a mycological point of view, were in the older parts of the woods, in moist places by the river side. Many wild-plant parasites in the shape of Uredines were met with. There were also saprophytes in abundance on the dead branches, etc., if one had only had more time to look them up. The beautiful blue-green mycelium of *Chlorosplenium æruginosum* had stained some of the broken branches quite through. *Armillaria mellea* was here, and will be a tough customer to eradicate. At this particular place it appeared to have been established for some time. One affected tree had been cut down ; on making a careful examination, the mycelium was found to envelope the whole tree beneath the bark, from base to apex, in a vast network of brown, cord-like strands.

1902 January 1.

Mr. Forbes had provided a very able lieutenant as supplementary leader, in the person of Mr. W. A. Thwaites, Masham, one of the carpenters on the estate; it was soon found that he also took a keen interest in fungi, and proved exceedingly helpful.

On comparing notes it was found that 106-8 known species had been noted. A fortnight later the writer, accompanied by Mr. U. Bairstow, Halifax, paid another short visit to the district, when a few more were added to the list. Messrs. Forbes and Thwaites again rendered both advice and assistance. The desirability of continuing the investigations for a month or two, as opportunity afforded, was talked over, when both our friends readily took up the suggestion and followed it out. Between Aug. 17th and Nov. 2nd, about 40 consignments of fungi were sent on to Halifax. On summing up the work, it was found the record of species had grown from nil to 416: not a bad season's work for a comparatively small area. They were nearly all gathered in the valley of the Burn: the majority in the vicinity of the estates saw-mill, where there is plenty of decaying undergrowth, and also rotting bark and wood. This affords another instance of what *may* be done in mycological investigation. (Another striking example will shortly be forthcoming in the 'Yorkshire List of Fungi,' showing the vast quantity of field work done in this line by Mr. Needham about Hebden Bridge.)

In addition to the number stated above, between 20 and 30 had to be laid on one side undetermined.

A noticeable feature in the accompanying records is the number of species belonging to the two genera *Mycena* and *Helotium*. Many other genera are also well represented, e.g., *Lepiota, Tricholoma, Pleurotus, Trichia,* etc. Among the rarer Yorkshire things are *Pleurotus applicatus, Pluteus pellitus, Russula æruginea, Nyctalis parasitica, Marasmius polyadelphus,* etc.

So far as can be ascertained at present, there are no species new to science. There are two additions to the British Flora, *Ombrophila decolorans* (Berk. & Curt.) = *Bulgaria decolorans* Berk. & Curt., Grevillea, Vol. 4 (1876), p. 6; and *Mollisia amenticola* (Sacc.), Rehm. Rabh. Krypt. Flo. Disc. p. 540. The former has hitherto been a North American species gathered in Alabama by Peters (No. 5222) and described by Berkeley and Curtis in Grevillea, l.c. The type specimen is in Berkeley's Herbarium (North American Fungi, n. 771) at Kew. It is one of those which has undergone re-description at the hands of Mr. Massee, the full text of which, and a figure,

are contained in the Linnean Society's Transactions, Vol. 31, pp. 466-7, Pl. 18, figs. 23-24. Mr. Massee has compared the Masham specimens, and found them to fit in every detail. The *Mollisia amenticola* has up to the present been a Continental species found on decaying female catkins of *Alnus glutinosa*. Many of the records are undoubtedly new to Yorkshire, but it is not possible at the present moment to say how many and which.

In consequence of the continued investigations subsequent to the August meeting, the editor considered it advisable to keep the report and list of fungi apart from the general report of the Excursion at Masham, and to include all the observations in one paper. Mr. Gibbs has therefore kindly handed over to me the mycological notes, taken at the August excursion, which he had in hand for the general report.

It will be noticed that the host-plant or habitat of a species is often omitted; it has scarcely been possible, under the circumstances, to give them in each case.

The species observed at the August meeting are marked by an asterisk. The collecting of the remainder stands to the credit of Mr. Forbes and Mr. Thwaites.

The classification of genera is the same as that used for the Cadeby list.

BASIDIOMYCETÆ.

(*GASTROMYCETÆ.*)

NIDULARIACEÆ.

Cyathus vernicosus DC.
On the ground.

Crucibulum vulgare Tul.
On dead twigs.

Sphærobolus stellatus Tode.
On rotten wood in moist places.

LYCOPERDACEÆ.

*Lycoperdon pyriforme Schæff.
On the ground in woods.

*L. bovista L.
In pastures.

L. nigrescens Vitt.
In pastures and meadows.

PHALLACEÆ.

Ithyphallus impudicus L.
On the ground in woods.

Mutinus caninus Fr.
On the ground in moist places in woods.

(*HYMENOMYCETÆ.*)

AGARICACEÆ.

Agariceæ.

Leucosporeæ.

Amanita phalloides Fr.
A. pantherina DC.
A. rubescens Fr.
A. asper Fr.
Amanitopsis vaginata Roze.
Lepiota procera (Scop.) Fr.
L. acutesquamosa Wein.
L. hispida Lasch.
L. cristata A.&S.
L. granulosa Batsch.
On the ground in woods.
L. polysticta Berk.
Distinct in the Lepiotæ on account of the thick firm flesh of the pileus. Among grass by side of footpath.
L. seminuda Lasch.
L. lenticulare Lasch.

*Armillaria mellea Flo. Dan.
Parasitic on various trees, and extremely difficult to keep in check. A form was collected with a peculiar, shining, blackish stem.
Tricholoma spermaticum Fr.
A great white, contorted specimen.
T. flavo-brunneum Fr.
T. albo-brunneum Pers.
T. terreum Schæff.
On the ground in a wood.
T. saponaceum Fr.
T. carneum Bull.
In pastures.
T. personatum Fr. 'Blewits.'
In meadows and pastures.
T. panæolum Fr.
T. melaleucum Pers.
In pastures.
T. humile Fr.
Clitocybe galinacea Scop.
C. gigantea Sow.
C. maxima Garten. & Mey.
*C. infundibuliformis Schæff.
On the ground in woods amongst fallen leaves.
C. geotropa Bull.
On the ground in woods.
C. ericetorum Bull.
C. brumalis Fr.
Amongst dead grass and leaves in woods and open places.
C. fragrans Sow.
On the ground in woods.
Laccaria laccata (Scop.) B. & Br.
*L. bella Fr.
Collybia butyracea Bull.
On the ground amongst dead leaves in woods.
C. velutipes Curt.
On living tree trunk.
C. conigena Pers.
On decaying fir-cones.
C. tuberosa Bull.
Springing from Sclerotia formed among organic débris in moist corners in woods.
C. nummularia Fr.
Among grass by road-side.
C. acervata Fr.
C. dryophila Bull.
C. clava L.
C. ambusta Fr.
Mycena luteo-alba Bolton.
M. gypsea Fr.
In tufts on the ground amongst dead leaves.
M. lactea Pers.
M. rugosa Fr.
M. galericulata Scop.
Both solitary and in fascicles about old stumps.
M. polygramma Bull.
M. tintinabulum Fr.
On decaying branches.
M. plicosa Fr.
M. alcalina Fr.
*M. ammoniaca Fr.
M. metata Fr.
M. stannea Fr.
On the ground amongst grass.
M. filopes Bull.
Amongst decayed leaves.
*M. debilis Fr.
M. speirea Fr.
M. acicula Schæff.
*M. sanguinolenta A. & S.
On and about decaying leaves.
M. galopoda Fr.
On the ground in woods amongst rotting twigs.
M. epipterygia Fr.
Amongst grass on the margins of woods.
M. clavicularis Fr.
M. tenerrima B.
M. corticola Schum.
M. hiemalis Osbeck.
M. capillaris Schum.
On beech leaves.
Omphalia hepatica Batsch.
Growing in bed of moss, etc.
O. grisea Fr.
On beech leaves.
*O. fibula Bull.
*O. integrella Pers.
Pleurotus dryinus Pers.
On oak wood.
P. ostreatus Jacq.
P. salignus Pers.
P. columbinus Bres.
On tree stump.

Pleurotus mitis Pers.
P. septicus Fr.
P. applicatus Batsch.
On dead twigs laid in hedge bottom.

Rhodosporeæ.

*Pluteus cervinus Schæff.
On dead stumps.
P. pellitus Pers.
Amongst grass.
Entoloma sinuatum Fr.
E. jubatum Fr.
*E. sericellum Fr.
E. sericeum Bull.
All in pastures and meadows.
Clitopilus prunulus Scop.
*C. orcella Bull.
Leptonia lampropoda Fr.
In pastures.
Nolanea pascua Pers.
In pastures and meadows.
*Claudopus variabilis Pers.

Ochrosporæ.

*Pholiota præcox Pers.
P. squarrosa Müll.
On dead trunk.
P. spectabilis Fr.
P. mutabilis Schæff.
The two latter on dead stump.
Inocybe lanuginosa Bull.
I. incarnata Bres.
I. lacera Fr.
I. rimosa Bull.
*I. asterospora Quelet.
Very similar to rimosa, but easily distinguished by its nodulose spores and bulbous base of stem.
I. geophylla Sow.
On the ground in woods.
Hebeloma mesophæum Fr.
H. crustuliniforme Bull.
On heavy soil in open places in woods.
Flammula sapinea Fr.
On heathy ground or in woods.
F. picrea Fr.
Naucoria temulenta Fr.
N. escharoides Fr.
*Galera tenera Schæff.
G. spartea Fr.
In fields.
*G. hypnorum Batsch.
On mossy banks and moss-covered rocks—the moss itself being obviously the habitat.
G. minuta Quelet.
Tubaria furfuracea Pers.
On the ground.
T. inquilina Fr.
On bit of rotten twig.
Crepidotus mollis Schæff.
Bolbitius tener Berk.
B. titubans Fr.
In rich meadows.
Cortinarius purpurascens Fr.
C. elatior Fr.
C. ochroleucus Schæff.
C. cinnamomeus L.
C. hinnuleus Fr.
C. acutus Pers.

Melanosporæ.

Agaricus arvensis Schæff.
*A. campestris L.
A. hæmorrhoidarius Kalch.
In pastures.
Stropharia æruginosa Curt.
In woods or shaded corners of fields.
S. merdaria Fr.
S. stercoraria Fr.
*S. semiglobata Batsch.
On cow dung in fields.
Hypholoma fasciculare Huds.
On dead stumps, in fascicles; occasionally solitary.
H. velutinum Pers.
H. pyrotrichum Holms.
*Panæolus phalænarum (Bull.) Fr.
P. retirugis Fr.
P. sphinctrinus Fr.
*P. campanulatus L.
On dung in rich pastures.
Anellaria separata L.
On dung in pastures.
Psilocybe subsericæa Fr.
P. cernua Flo. Dan.
In fragile fascicles on dead wood.
Psathyra conopilea Fr.
P. spadiceo-grisea Schæff.
P. semi-vestita B. & Br.
P. pennata Fr.
*Psathyrella disseminata Pers.
In crowds on dead stumps.

*Psathyrella atomata Fr.
Amongst grass.
Coprinus comatus Fr.
C. atramentarius Fr.
C. niveus Pers.
*C. micaceus Fr.
On dead stumps and logs, from a beautiful golden-brown mycelium.
C. radiatus Bolt.
*C. plicatilis Curt.
In pastures ; soon collapsing.

Paxilleæ.

Hygrophorus pratensis Pers.
var. cinereus Fr.
H. virgineus Wulf.
H. niveus Scop.
H. ceraceus Wulf.
H. coccineus Schæff.
H. miniatus Fr.
H. puniceus Fr.
H. obrusseus Fr.
H. chlorophanus Fr.
H. psittacinus Schæff.
All in pastures or on grassy roadsides.
Paxillus involutus Batsch.
P. panuoides Fr.

Lactarieæ.

Lactarius torminosus Schæff.
L. turpis Weinm.
L. quietus Fr.
L. glyciosmus Fr.
*L. mitissimus Fr.
L. subdulcis Bull.
L. camphoratus Fr.
All on the ground in woods or on field sides bordering woods.
Russula nigricans Bull.
R. delica Fr.
R. furcata Pers.
*R. vesca Fr.
R. cyanoxantha Schæff.
R. heterophylla Fr.
*R. fellea Fr.
R. emetica Fr.
*R. ochroleuca Pers.
*R. æruginea Fr.
R. fragilis Pers.
R. integra L.
All on the ground in woods, or fields bordering woods.

Cantharelleæ.

*Cantharellus cibarius Fr.
C. aurantiacus Fr.
Nyctalis parasitica Bull.
On decaying Russula nigricans.

Marasmieæ.

Marasmius urens Bull.
M. peronatus Bolton.
Amongst dead leaves.
*M. oreades Bolton.
In 'fairy rings' in pastures.
*M. ramealis Bull.
On decaying twigs.
M. rotula Scop.
M. androsaceus L.
On stems of wild raspberry, on pine leaves, and larch twigs. In every case showing superficial mycelium, which gave the twigs, etc., the appearance of being entangled in horse hair.
M. saccharinus Batsch.
M. polyadelphus Lasch.
On fallen Cratægus leaves.
Lentinus tigrinus Bull.
Panus conchatus Fr.

POLYPORACEÆ.

Boleteæ.

*Boletus flavus With.
*B. chrysenteron Fr.
B. subtomentosus L.
*B. badius L.
*B. piperatus Bull.
B. granulatus L.
*B. scaber Fr.
Fistulina hepatica Fr.

Polyporeæ.

*Polyporus squamosus Fr.
On living ash trees.
P. varius Fr.
*P. giganteus Fr.
Both on dead stumps.
*P. sulphureus Fr.
*P. hispidus Fr.
On living ash trunks.
P. betulinus Fr.
On birch.
*P. fumosus F.
On dead stump.

Polyporus adiposus B.&Br.
On soil, remains of twigs, etc.
Polystictus versicolor Fr.
On all kinds of dead wood.
P. radiatus (Sow.) Fr.
P. hirsutus Fr.
P. velutinus Fr.
Fomes fomentarius Fr.
F. annosus Fr.
On decaying tree root.
F. applanatus Wallr.
*F. ferruginosus (Fr.) Mass.
Spreading extensively over old trunk lying in sawmill yard.
*Poria vaporaria Fr.
On dead branches.
P. medulla-panis Fr.
On dead decorticated trunks or branches.
*P. blepharistoma B.&Br.
On damp decaying branches.
P. callosa Fr.
P. sanguinolenta A.&S.
Trametes serpens Fr.
Dædalia quercina Pers.
Merulius lacrymans Fr.
On wood used in the structure of an outbuilding.

HYDNACEÆ.

*Hydnum niveum Pers.
H. argutum Fr.
*Grandinia granulosa Fr.
All on decaying wood.

CLAVARIACEÆ.

Clavaria muscoides L.
C. cinerea Bull.
A very fine tuft. On the ground in woods.
C. cristata Holmsk.
C. inæqualis Flo.Dan.
Amongst grass in pastures.
C. vermicularis Scop.
In pastures.
Typhula erythropus Fr.
From Sclerotia in dead herbaceous stems.
Pistillaria puberula Berk.
On damp rotting leaves of Ulmus montana.

THELEPHORACEÆ.

Thelephoreæ.

Stereum hirsutum Fr.
S. purpureum Pers.
On dead wood.
Corticium sambuci Fr.
On elder bark.
*C. sanguineum Fr.
C. comedens Fr.
On living branches of hazel.
Hymenochæte rubiginosa Lév.
On dead wood.
Cyphella Pimii Phil.
C. capula Fr.
Both on dead herbaceous stems.
C. villosa Karst.
On dead branches.
*C. dochmiospora B.&Br.
Thelephora laciniata (Pers.).
On the ground in woods, often enveloping twigs, grass, etc.

TREMELLACEÆ.

Tremelleæ.

Ulocolla foliacea (Cke.) Bref.
Tremella lutescens Pers.
*T. mesenterica Retz.
All on dead branches.

Dacryomyceteæ.

*Dacryomyces deliquescens Duby.
*D. stillatulus Nees.
Both plentiful on decorticated, or on worked wood.

Protoclavarieæ.

Calocera viscosa Fr.
C. cornea Fr.

UREDINACEÆ.

Puccineæ.

*Uromyces polygoni (Pers.).
On Polygonum aviculare.
Puccinia calthæ Link.
On Caltha palustris.
P. variabilis Grev.
On Taraxacum.
*P. violæ (Schum.) Wint.
On Viola odorata.
*P. pimpinellæ (Straus.).
On Myrrhis odorata.

*Puccinia menthæ Pers.
On Mentha in moist places in a wood.
P. rubigo-vera (DC.).
On Holcus mollis.
P. poarum Niels.
Æcidium on Tussilago.
*P. caricis (Schum.) Wint.
On Carex leaves.
*P. hieracii (Schum.).
On Carduus palustris.
*P. lychnidearum Link.
On Lychnis diurna.
*Triphragmium ulmariæ (Schum.) Wint.
On Spiræa ulmaria.
*Phragmidium violaceum (Schultz.).
On Rubus.
*P. subcorticatum (Schum.).
On Rosa.
Melampsora farinosa Schrœt.
On Salix caprea.
*M. epitea (Kze.&Schm.).
On Salix viminalis.
*Coleosporium sonchi (Pers.).
On Petasites vulgaris.

USTILAGINACEÆ.

Ustilago violacea (Pers.).
On anthers of Lychnis diurna.

ASCOMYCETÆ.

(PYRENOMYCETÆ.)

PERISPORIACEÆ.

Erysipheæ.

*Sphærotheca humile (DC.) Burr.
On Alchemilla vulgaris.
*S. pannosa Lév.
On Rosa (Oidium stage).
Uncinula aceris (DC.) Sacc.
On sycamore leaves.
Microsphæria grossulariæ Lév.
On gooseberry leaves.
Erysiphe polygoni DC.
On Lychnis diurna and Heracleum sphondylium.
*E. cichoracearum DC.
On burdock = Arctium Lappa.

SPHÆRIACEÆ.

Sphærelleæ.

*Sphærella rumicis Desm.
On Rumex acetosa.

Pleosporeæ.

Leptosphæria doliolum (Pers.).
On dead herb stems.
L. acuta Mont.&Nestl.

Sphærieæ.

Lasiosphæria ovina Pers.
On rotten wood.

Sordarieæ.

Sordaria coprophila C.&DeN.
S. minuta Fckl.
On rabbit dung.
Sporormia intermedia Awd.
S. minima Awd.
Both on rabbit dung.

XYLARIACEÆ.

Xylaria hypoxylon L.
On dead stumps, etc.

VALSACEÆ.

*Eutypa lata Tul.

DOTHIDEACEÆ.

Phyllachora junci Fr.
On rush stems.
P. graminis Fr.
On leaves of Aira cæspitosa.

HYPOCREACEÆ.

*Nectria cinnabarina Fr.
N. coccinea Fr.
On decorticated branches.
N. aurea Grev.
On rotting chip.
*Hypocrea rufa Pers.
On worked wood.
*Epichloë typhina Pers.
On grass stems.
Cordyceps militaris Fr.
On dead pupæ buried in the soil.

(DISCOMYCETÆ.)

HELVELLACEÆ.

Geoglosseæ.

Mitrula cucullata Batsch.
On fallen leaves of Scotch fir.

PEZIZACEÆ.

*Peziza vesiculosa Bull.
P. ochracea Boud.
P. badia Pers.
On the ground.
P. pustulata Pers.
Otidea aurantia (Pers.).
O. luteo-nitens (B.&Br.) Mass.
*Humaria Oocardii (Kalch.) Sacc.
On twigs in water.
H. granulata Sacc.
On cow dung.
*Lachnea scutellata (L.).
On dead sticks in wet places.
L. umbrorum (Cke.).
On moist banks.
Helotium claro-flavum (Grev.).
On dead branch.
H. ferrugineum (Schum.).
On dead twigs.
H. lenticulare (Bull.).
On decaying stump.
*H. pallescens Fr.
H. flavum (Klotz.).
On dead branch.
H. lutescens (Hedw.).
On decaying moss-covered branch.
H. salicellum Fr.
On dead willow branch.
H. virgultorum (Vahl.).
On dead branches of birch and hazel.
*H. cyathoideum (Bull.).
On dead herbaceous stems.
H. scutulum Karst.
On dead herbaceous stems.
forma rubi Rehm.
On decaying stems of Rubus idæus.
H. herbarum (Pers.).
On dead herbaceous stem.
H. epiphyllum (Pers.).
On the veins of rotten leaves.
H. phyllophilum (Desm.).
On dead leaves of beech and oak.
H. renisporum (Phil.) Ellis.
On petioles and sometimes on the principal veins of dead oak leaves.
H. fagineum (Pers.).
On beech mast; also on hazel husks.
H. alniellum Karst.
On decaying female catkins of alder.
Cyathicula coronata (Bull.).
On decaying herb stem; often nettles.
*Chlorosplenium æruginosum Œd.
Some thick branches were stained a beautiful blue-green completely through.
*Mollisia atrata (Pers.).
On decaying herbaceous stems.
*M. cinerea (Batsch.)
On decorticated wood.
*M. melaleucà (Fr.) Sacc.
On wood.
M. amenticola (Sacc.) Rehm.
On female catkins of Alnus glutinosa = alder.
Tapesia cæsia (Pers.) Fckl.
On decorticated wood, from a spreading, white subiculum.
*Dasyscypha virginea (Batsch.) Fckl.
On wood, twigs, and herb stems.
*D. nivea (Hedw.) Mass.
On old root-wood.
D. bicolor (Bull.).
On dead branches.
*D. acuum A.&S.
On pine leaves.
D. aspidicola (B.&Br.) Sacc.
On dead rachis of bracken.
*D. hyalina (Pers.) Mass.
On decaying wood and bark.
*D. calycina (Schm.) = P. Wilkommii.
Erumpent on bark of twigs and branches of larch.
D. subtilissima (Cke.) Sacc.
On bark of firs. Externally much resembling the preceding species, but at once recognised by its smaller spores.

Dasyscypha pygmæa (Fr.) Sacc.
Belonidium pruinosum (Jerd.) Mass.
On Eutypa lata.

ASCOBOLACEÆ.

Ascophanus equinus Müll.
Ryparobius argenteus B.&Br.
On rabbit dung.
Ascobolus furfuraceus Pers.
A. immersus Pers.

DERMATACEÆ.

Cenangium dryinum (Cke.) Mass.

BULGARIACEÆ.

Ombrophila decolorans (Brk.&Crt.).
On decaying stump.
*O. clavus (A.&S.) Cke.
On decaying twigs in water.
Orbilia vinosa (A.&S.) Karst.
*O. leucostigma Fr.
O. luteo-rubella (Nyl.) Karst.
All on decaying wood.
Coryne sarcoides (Jacq.).
On decaying wood.

PHACIDIACEÆ.

Stegia ilicis Fr.
On dead holly leaves.
*Rhytisma acerinum Pers.
*R. punctatum Pers.
Both on sycamore leaves.

PHYCOMYCETÆ.

MUCORACEÆ.

Mucoreæ.

Mucor mucedo L.
Spinellus fusiger V.T.
On agaric.
Pilobolus crystallinus Tode.
Common on cow dung.

Cystopodaceæ.

Cystopus candidus Lév.
On Capsella = shepherd's purse.

ENTOMOPHTHORACEÆ.

Empusa muscæ Cohn.
Enveloping a dead fly.

PERONOSPORACEÆ.

*Phytophthora infestans DeBary.
Attacking live potato-haulms.

MYXOMYCETÆ.

MYXOMYCETACEÆ.

Physareæ.

Physarum leucophæum Fr.
P. nutans Pers.
Fuligo varians Somm.
*Chondrioderma
difforme (Pers.) Rost.

Didymieæ.

Didymium squamulosum Fr.
forma genuinum Rost.

Stemoniteæ.

*Stemonites fusca Roth.
*S. Friesiana DeBary.

Tubulineæ.

Tubulina flexuosa Poir.

Reticularieæ.

Reticularia lycoperdon Bull.

Trichieæ.

Trichia fragilis Rost.
T. varia Rost.
T. chrysosperma DC.
*T. fallax Pers.
T. affinis DeBary.
Hemitrichia rubiformis (Pers.).

Arcyrieæ.

Arcyria punicea Rost.
A. nutans Grev.
A. cinerea (Gmel.) Schum.

Lycogaleæ.

*Lycogala epidendron Rost.

CERATIOMYXACEÆ.

*Ceratiomyxa mucida Schrœt.
= Ceratium hydnoides A.&S.
On rotten wood.

DEUTEROMYCETÆ.

SPHÆRIOIDACEÆ.

Phoma nebularis Berk.
P. samarorum Desm.
On ash fruits.
Ascochyta aceris Lib.
On living leaves of sycamore.

LEPTOSTROMACEÆ.

Leptothyrium ribis Lib.
On fading leaves of red currant.

EXCIPULACEÆ.

Dinemasporium graminum var. herbarum Cke.
On decaying herbaceous stems.
Pilidium acerinum Kze.
On dead leaves of sycamore.

HYPHOMYCETÆ.

MUCEDINACEÆ.

*Monilia aurea Genel.
Cylindrium flavo-virens Bon.
On dead oak leaves.
Botryosporium pulchrum C.
On decaying herbaceous stem in shaded places, as nettle beds, etc.
Trichoderma lignorum Harz. = T. viride Pers.
On worked wood, or on cut surfaces of unworked. The conidial stage of Hypocrea rufa.
Penicillium glaucum.
Botrytis cinerea Pers.
On decaying leaves.
Sepedonium chrysospermum Fr.
On decaying fungi. It appears to have a preference for living Boleti, which it soon stifles, but also attacks Lactarii and others. It is the conidial condition of Hypomyces chrysospermus.
Verticillium agaricinum Corda.
On decaying agaric. Possibly the conidial stage of some Hypomyces.
*V. lateritium Berk.
On decaying herbaceous stems.
Dactylium dendroides Fr.
On gills of living Cantharellus aurantiacus and other agarics. The Masham specimen was at first in a little round patch on the gills. The pileus of the Cantharellus was laid gills upward on a bed of moistened moss in a dish, and put in a cool place. It was seen to gradually extend its borders in all directions. Its development was very rapid. In seven days it had completely enveloped the agaric and spread over the moss to the extent of a couple of inches nearly all round. Conidia were produced in myriads. This mould is stated to be the conidial stage of Hypomyces rosellus Tul. The production of perithecia is being anxiously looked for.
Cladosporium herbarum Link.
On decaying grass leaves.
Polythrincium trifolii K. & S.
On fading leaves of clover.
*Torula herbarum Link.
On dead herbaceous stems.
Stilbum tomentosum Schrad.
Parasitic on Trichia.
S. vulgare Tode.
On wood.
S. fimetarium B. & Br.
On rabbit dung.
Isaria farinosa Fr.
On dead pupæ. The conidial condition of Cordyceps militaris.
I. floccosa Fr.
On a dead grub which had crept inside a perforated empty shell of hazel nut.
I. brachiata Schum.
On decaying agaric.
Tubercularia vulgaris Tode.
Has a strong liking for fallen beech branches. The mycelium circumscribes the wood beneath the bark and pushes through to the surface of the bark its coral-red tubercles of conidiophores and conidia. The conidial condition of Nectria cinnabarina.
*Ægerita candida Pers.
On rotten wood in moist places.
Volutella ciliata Fr.
On decaying wood, twigs, etc.
*Fusarium roseum Link.
On decaying stems.
*F. brassicæ Thüm.
On cabbage stalk.

NOTES on DURHAM MAMMALS.

Long-eared Bat in the Derwent Valley, Durham.—In May 1899 a fine specimen of the Long-eared Bat (*Plecotus auritus*) was shot near Rowlands Gill, by Mr. Robert Grey, of that village.—J. W. FAWCETT, Satley, Darlington, 22nd November 1901.

Badgers in the Derwent Valley.—In the summer of 1899 a female Badger (*Meles meles*) was caught near to the Broad Oak covers, between Whittonstall and Chopwell, and was kept in confinement for some time. This animal, once rare in the Derwent Valley, is now becoming fairly common, and has established itself in many places, and especially in the woods of the Hixhope dene, near Muggleswick, the Flandersbrough woods on the Derwent, near the same village, the woods near Alansford, the woods of Milkwell Burn, and Gibside woods.

On 11th June 1901, three Badgers—a mother and two young—were dug out of a hole in a wood on the Durham side of the Derwent Valley, a little above Alansford.—J. W. FAWCETT, Satley, Darlington, 22nd Nov. 1901.

NOTES on YORKSHIRE BIRDS.

Black Redstart near Scarborough.—A nice specimen of the Black Redstart (*Ruticilla tithys*) ♀ has come into my possession. It was shot at Scarborough on 15th November.—R. FORTUNE, Harrogate, 19th Nov. 1901.

Montagu's Harrier in Yorkshire.—I have added to my collection a good specimen of Montagu's Harrier (*Circus cineraceus*) ♂ which unfortunately met its death by being caught in a trap at Bickley on 26th April.—R. FORTUNE, Harrogate, 19th November 1901.

NOTE on DURHAM BIRDS.

Hoopoe in the County of Durham.—In the month of June 1901 a fine specimen of the Hoopoe (*Upupa epops*) was wantonly shot in Chopwell Woods, in the Derwent Valley, in the County of Durham, by a pot-hunter. It is a great pity that such characters, who, for the selfish pleasure of exhibiting the carcase of a rare bird in a glass case, and so depriving the rest of people of the delight of seeing the bird in its natural state, cannot be severely punished.—J. W. FAWCETT, Satley, Darlington, 22nd Nov. 1901.

NOTE on CUMBERLAND COLEOPTERA.

***Euryporus picipes* near Carlisle.**—On 2nd November last I had the pleasure of taking a single specimen of the very rare Staphylinid Beetle, *Euryporus picipes* Pk., near here. The locality was a piece of waste land overgrown with Heather (*Polytrichum* and *Sphagnum*) bordering on a Fir wood close to the village of Durdar. It was taken by teasing *Sphagnum* over a sheet of brown paper.—JAS. MURRAY, 11, Close Street, Carlisle, 11th December 1901.

NOTES on LEPIDOPTERA.

Death's Head Moth in Durham.—A beautiful specimen of the Death's Head Moth (*Acherontia atropos*) was captured at Castlesides by Mr. Charles Almond, of Consett, on Saturday, 8th June 1901.—J. W. FAWCETT, Satley, Darlington, 22nd November 1901.

Death's Head Moth in South Northumberland.—On Monday evening, 14th October 1901, a fine specimen of a Death's Head Moth (*Acherontia atropos*), measuring five inches from tip to tip of wing, with the length of body 2⅜ inches, was captured in the Vicarage garden, at Haydon Bridge, by Mr. J. H. Mandell, jun., a rare occurrence for this season of the year.—J. W. FAWCETT, Satley, Darlington, 22nd Nov. 1901.

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Yorkshire Bryological Committee—Report for 1901.—J. J. Marshall.
Chemistry of Some Common Plants.—P. Q. Keegan, LL.D.
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Silverdale Plants, West Lancs.—S. L. Petty.
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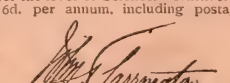

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Birds of the Isle of Man.—Being engaged in the collection of material for a work on Manx Birds, I would gratefully receive and acknowledge information bearing on the subject, or references to books, periodicals, etc., in which such occur, and which may not have come under my notice.—P. RALFE, The Parade, Castletown, Isle of Man.

SOME PLANTS OF SILVERDALE, WEST LANCASHIRE.

S. LISTER PETTY,
Ulverston.

For some reason the Silverdale area, like that of Leck,* seems to have been neglected except by the rarity hunter and Messrs. Wilson and Wheldon. Occasionally parties of members of local natural history societies have visited the district, but their records are usually so loosely given as to be, for list purposes, worthless.

In attempting to include the rather scattered references in the Exchange Club's issues, a difficulty presented itself which I have been unable to overcome; some of these issues are, seemingly, neither to be borrowed nor bought, therefore I know not what they contain, and if any record is omitted, it is to be regretted, but so it must be.

The area of Silverdale proper is marked on Ordnance 6-inch Map, 18, Lancashire. It runs from a stream in the Saltmarsh called The Pool, along the railway to the road near the station, along this road to Trowbarrow, running along the Trough to White Scar between the tarns at Hawes Water. From thence almost straight along — north-west to the county boundary stone near Cold Well Limeworks. From there westward over the moss to the railway, following it to a lane from Middlebarrow Quarry (some 600 feet from the boundary wall at Waterslack Wood), then up through Waterslack and Eaves Wood, keeping to the wall; over Castlebarrow, and down to the shore at Wall End. Round the shore, across the marsh below Heald Brow to Quakers' Stang, and so to the railway again. On account of several old records, Little Hawes Water has been included in Silverdale, though really in Yealand Redmayn, and less than 1,000 yards from the line over White Scar. The formation is limestone.

I have to express my great indebtedness to Messrs. A. Wilson, F.L.S., and J. A. Wheldon, F.L.S. Mr. Wilson allowed me to use a list of his; this is indicated by the initials 'A. W.' Mr. Wheldon, besides helping the list, kindly read for me some of the issues of the Bot. Exchange Club which I could not see. Mr. J. Cosmo Melvill, F.L.S., and Mr. Arthur Bennett, F.L.S., have both been good enough to examine species for me, and the latter also searched the Record Club and Exchange Club's

* Plants of Leck, V.C. 60, 'The Naturalist,' March and April 1893.

issues. The former gentleman also allowed some of his finds to be included.

Bibliography.—**1688.** Ray, Fasciculus. **1719.** Derham, Philos. Letters of Ray, for Lawson's letter to Ray, April 1688. **1775.** Jenkinson,* Description of British Plants. **1843.** The Phytologist—quoted here in place of Newman's Ferns, as I have no access to that book. **1859.** Moore and Bradbury, Nature Printed Ferns, 8vo. ed. **1864.** Botanists' Chronicle. C. J. Ashfield's list. (**1869**) Aspland's Guide to Grange. Anthony Mason's list. **1883.** Watson, Top. Botany, ed. ii. **1885.** Baker's Flora of Lake District, two records by Miss Beever. **1897.** The Naturalist, April. **1898.** Journal of Botany.

Of the issues of Bot. Exchange Club, Botanical Record Club, Watson Exchange Club, there are still a few to see to ensure completeness.

Thalictrum flavum L. Ditch near Silverdale Station, A. W. Ditch-side on Silverdale Moss, and in field side of road to Middlebarrow Crossing, but in West Lanc., 1901.

Anemone nemorosa L. Eaves Wood and other woods and lane-sides.

Ranunculus Drouetii Godr. **1883.** Rep. Bot. Rec. Club, 1881-2, p. 183. 'Ditch near Arnside Tower, C. Bailey.' Mr. Lees wrote me that the locality is really in West Lancs., near the railway line.

Ranunculus heterophyllus Fr. var. ***submersus.*** **1883.** Rep. Bot. Rec. Club, 1881-2, p. 203. 'Ditch by railway between Silverdale and Arnside, in that portion of the district within the boundary of West Lancashire, Chas. Bailey.'

Ranunculus peltatus Schr. Stream from Burton Well.

Ranunculus hederaceus L. Bank Well.

Ranunculus sceleratus L. Side of The Pool, just over Quicksand Pool Bridge, 1901.

Ranunculus Flammula L. Stream from Little to Great Hawes Tarn.

Ranunculus auricomus L. Frequent in the district, A. W.

* J. Jenkinson.—Some years ago I tried to get some particulars of him and failed. Messrs. Britten and Boulger, in their 'Index of British and Irish Botanists,' fared no better. The following copy of his tombstone inscription at Yealand Conyers, was kindly obtained for me by a gentleman in the district:—'Sacred | to the Memory of | James Jenkinson, Esq. | Yealand Conyers, | who departed this life | 15 October 1808 | having nearly completed his 70th year | and according to his request was interred here.'

Ranunculus acris L. Road-side near Great Tarn.

Ranunculus repens L. Foot of walls in village.

Ranunculus bulbosus L. In field near station.

Ranunculus Ficaria L. Common in the District, A. W.

Caltha palustris L. About Burton Well, Bank Well, and Little Hawes Tarn.

Helleborus viridis L. Mr. Wilson told me he had heard that this species grew years ago in an old orchard (now gone wild) at Silverdale. We have both seen it there this season.

Aquilegia vulgaris L. **1864.** Bot. Chron., 73. 'Abundant, woods and hedge banks,' C. J. Ashfield. Castlebarrow; Waterslack Wood.

Berberis vulgaris L. **1883.** Rep. Bot. Rec. Club, 1881-2, p. 248. 'Amongst limestone rocks, Heald Brow, Silverdale,' A. Wilson.

Nymphæa lutea L. **1775.** J. Jenkinson, Brit. Pl., 113. 'Hairs Water.' He does not say which tarn; on Little Hawes it is abundant.

Castalia speciosa Salisb. **1775.** J. Jenkinson, Brit. Plants, 113. 'About Hairs Water.' There still.

Papaver Rhœas L. Near the station, A. W. Amongst oats, near Cray Green.

Papaver dubium L. Near the station, A. W.

(***Glaucium flavum*** Crantz. **1864.** Bot. Chron., 73. Sea shore, C. J. Ashfield in his list of Silverdale plants. He included species from Arnside, and as I have not seen it here, or heard of it from Arnside, if any reader has seen it in the latter locality will he kindly communicate.)

Chelidonium majus L. (**1864.** Bot. Chron., 73. 'Hedge bank near Victoria Inn,' C. J. Ashfield. Where is this?) Seen about Silverdale, A. W. Outside a cottage near Cray Green. Road-side near last house before Silverdale Moss Road.

Fumaria Boræi Jord. Oat field outside path, Cray Green to side of Hagg Wood, 1901. Specimen seen by Mr. Wilson. Border of the field which contains Little Hawes Tarn, 1898.

Fumaria officinalis L. Field border near Hagg Wood, 1901. Hedge side near Little Hawes Tarn, 1898.

Cheiranthus Cheiri L. **1864.** Bot. Chron., 73. 'Cliff on coast between Silverdale and Arnside Point,' C. J. Ashfield. Three plants in cleft of rock (just below the wall) between Cove and Westmorland boundary, 1898.

Nasturtium officinale R.Br. Side of stream from Burton Well and other places.

Arabis hirsuta Scop. **1864.** Bot. Chron., 73. 'Not uncommon by road-sides, on rocks, banks, etc.,' C. J. Ashfield. Frequent, A. Wilson; and so I found it, fine on Castlebarrow.

Cardamine pratensis L. Side of stream near Burton Well, etc.

Cardamine hirsuta L. Side of feeder, Great Tarn.

Cardamine impatiens L. **1883.** Watson, Top. Bot., ed. ii., p. 4. 'V.C. 60, West Lancs., J. C. Melvill.' Mr. Melvill kindly tells me he gathered the plant in the Silverdale district in 1868.

Erophila brachycarpa Jord. **1883.** Rep. Bot. Rec. Club, 1881-2, p. 248. Silverdale, A. Wilson.

Cochlearia officinalis L. Saltmarsh at Silverdale, A. W.

Hesperis matronalis L. Border of Hawes Tarn, 1868, J. C. Melvill.

Sisymbrium officinale Scop. Road-sides, Silverdale village.

Sisymbrium Alliaria Scop. Hedge- and road-sides.

Brassica Sinapistrum Boiss. Cultivated ground and road-sides; far too common.

Bursa Bursa-pastoris Web. Road- and field-sides.

Lepidium hirtum Sm. Side of road near old church.

Cakile maritima Scop. A few plants only, near the Cove.

Reseda Luteola L. In a field near Silverdale Station, 2nd July 1900.

Helianthemum Chamæcistus Mill. **1864.** Bot. Chron., 73. 'Rocks, very abundant,' C. J. Ashfield. Frequent, A. Wilson. Everywhere common, from shore level to 250 on Castlebarrow.

Viola palustris L. Road-side, Challan Hall to Tarn, but nearer Tarn.

Viola hirta L. **1883.** Rep. Bot. Rec. Club, 1881-2, p. 248. 'Woods, Silverdale,' A. Wilson. Lane-side, near Tarn, and in Magstone Wood, etc.

Viola Riviniana Reich. Edge of Eaves Wood; named at sight only, no specimen kept, 1898.

Viola tricolor L. Eaves Wood clearing; side of feeder to Great Tarn.

Polygala serpyllacea Weihe. From shore bank to high up on Castlebarrow.

Silene Cucubalus Wibel. On shore, and lining many lane-sides, e.g., Red Bridge Lane.

Silene maritima With. Frequent, A. W. On the shore.

Lychnis alba Mill. Near Burton Well, A. W. In a meadow, on path between Hollin Lane and Heald Brow. On road-side opposite Holly House, a few plants, 1901.

Lychnis dioica L. Eaves Wood; side of Little Hawes Tarn, and road-sides.

Lychnis Flos-cuculi L. Side of stream near Burton Well, and in the fields near Bank Well.

Cerastium glomeratum Thuil. Road-side near Challan Hall and near Tarn.

Stellaria media Cyr. Foot of walls in village, etc.

Stellaria Holostea L. Hedge-side in Cove Lane; wood-side round Little Tarn.

Stellaria uliginosa Murr. Side of Little Tarn.

Arenaria verna L. **1864.** Bot. Chron., 73. Hilly pastures, frequent, C. J. Ashfield. Frequent, A. W. I should say common from shore bank.

Arenaria serpyllifolia L. Fields near shore; hard margin of Great Tarn.

VAR. ***leptoclados*** Guss. Side of Bottoms Lane. Specimen seen by Messrs. Wheldon and Wilson.

Arenaria peploides L. Shore, A. W. Seen.

Sagina procumbens L. Road-side, Jenny Brown's Point and Lindeth. A weed, garden walks, Cray Green.

Buda media Dum. and ***B. marina*** Dum. On the shore, but sparsely distributed.

Hypericum perforatum L. Eaves Wood and road-sides.

Hypericum quadratum Stokes. Near the Tarn.

Hypericum humifusum L. On the edge of the Common, near the Tarn, etc.

Hypericum pulchrum L. Castlebarrow and other localities.

Hypericum hirsutum L. Eaves Wood.

Hypericum montanum L. Rough pastures between Burton and Bank Wells.

Malva moschata L. Side of lane near Oak Cottage.

Malva sylvestris L. Outside Bottoms—a farm; on shore bank.

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Geranium sanguineum L. **1864.** Bot. Chron., 73. Dry woods and rocky places, C. J. Ashfield. Eaves Wood; Waterslack Wood. Seen also by Mr. Wilson.

Geranium pratense L. Silverdale Moss Road, lining road-side, beyond last house. Road-side, outside a garden, Silverdale; an escape here.

Geranium molle L. Eaves Wood and many road-sides.

Geranium dissectum L. Eaves Wood and road-sides.

Geranium columbinum L. Hedge-side near cemetery; and just off shore, Cove; shore foot of Heald Brow, 1901.

Geranium lucidum L. **1864.** Bot. Chron., 73. Old walls, very abundant, C. J. Ashfield. I can but echo this.

Geranium Robertianum L. Elmslack, etc. White flowered form, Burton Well Scroggs, 1898 and 1901.

Mr. Wilson tells me he has seen all these Geraniums.

Erodium cicutarium L'Herit. A few plants on ground near Jenny Brown's Point, 1901.

Oxalis Acetosella L. Eaves Wood and hedge banks.

Ilex Aquifolium L. Eaves Wood and on the limestone scars.

Euonymus europæus L. **1864.** Bot. Chon., 73. Woods and hedges, frequent, C. J. Ashfield. **1875.** Rep. Bot. Rec. Club. 1874. Silverdale, C. Bailey. Silverdale, A. W. In all the woods and many hedges.

Rhamnus catharticus L. **1864.** Bot. Chron., 73. Woods and hedges, frequent, C. J. Ashfield. Fine in hedges near the Tarn, 1898. Seen there, A. W.

Rhamnus Frangula L. Seen at Silverdale, A. W. Hedge near Great Tarn, but not so frequent as previous species.

Acer Pseudo-platanus L. Eaves and other woods. Seedlings spring up plentifully but of course originally introduced.

Genista tinctoria L. Silverdale, A. W.

Ulex europæus L. Shore bank and other places.

Ononis repens L. Road-side near station.

Trifolium pratense L. Many road-sides; fine in lane to Burton Well.

Trifolium medium L. Road-side near Elmslack.

Trifolium procumbens L. From shore level upwards.

Trifolium dubium Sibth. From shore level upwards.

Anthyllis Vulneraria L. From shore level upwards.

Lotus corniculatus L. From shore level upwards.

Lotus crassifolius Pers. Shore.

Lotus uliginosus Schk. Side of railway line at Trowbarrow.

Hippocrepis comosa L. Shore bank. Rocks near Jenny Brown's Point.

Vicia hirsuta Gray. Trowbarrow and other places.

Vicia Cracca L. Waterslack hedges.

Vicia sepium L. Field hedges near Elmslack.

Lathyrus pratensis L. Fine in field opposite Vicarage, 1898.

Prunus spinosa L. Castlebarrow, and in woods and hedges.

Prunus Avium L. A fine tree at Trowbarrow. Hanging over from a field into Hollin Lane—in good fruit—1901.

Spiræa Ulmaria L. Wood Well, and in coppice close by.

Spiræa Filipendula L. **1883.** Rep. Bot. Rec. Club, 1881-2, p. 210. Pasture near Silverdale Station, A. Wilson. Very fine on the rough ground between Bank and Burton Wells.

Rubus Idæus L. Eaves Wood, etc. Silverdale, Messrs. Wheldon and Wilson.

Rubus pulcherrimus Neum. Silverdale, J. Wheldon in J. of B., October **1898.**

Rubus rusticanus Merc. Silverdale, Mr. Wheldon in letter.

Rubus Sprengelii Weihe. Silverdale, Mr. Wheldon in letter.

Rubus leucostachys Schl. J. A. Wheldon in Rep. Bot. Ex. Club, **1898,** and J. of B., October **1898.**

Rubus pallidus Bab. J. A. Wheldon in Rep. Bot. Ex. Club, **1898,** and J. of B., October **1898.**

Rubus rosaceus (sp. col.?). Silverdale, J. A. Wheldon in letter.

Rubus corylifolius Sm. var. ***sublustris.*** J. A. Wheldon in Rep. Bot. Ex. Club, **1898.**

Rubus cæsius L. Messrs. Wheldon and Wilson. Castlebarrow; Eaves Wood.

Rubus saxatilis L. **1887.** Rep. Bot. Rec. Club, 1884-5-6, p. 90. Rocky woods above Hawes Water, Silverdale, A. Wilson.

Geum urbanum L. Eaves Wood and road-sides.

Geum rivale L. **1864.** Bot. Chron., 74. Marshes, frequent, C. J. Ashfield. Side of stream from Burton Well, 1898-1901.

Fragaria vesca L. In profusion on White Scar, between the tarns.

Potentilla Fragariastrum Ehrh. Everywhere common.

Potentilla verna L. **1885.** Baker, Flora of Lake District, 78. Silverdale, Miss Susan Beever.

Potentilla sylvestris Neck. Common, as is

Potentilla Anserina L.

Alchemilla vulgaris L. Side of path, Oak Cottage to shore, etc.

Agrimonia Eupatoria L. Trowbarrow; road-side near Challan Hall; Magstone Wood and shore rocks outside.

Poterium Sanguisorba L. **1864.** Bot. Chron., 74. Dry pastures, frequent, C. J. Ashfield. Road-sides, etc., common.

Poterium officinale Hook.fil. Castlebarrow; White Scar; Heald Brow. Near Wood Well.

Rosa spinosissima L. Eaves Wood; Castlebarrow; common near Wood Well.

Pyrus rupicola Syme. As *Aria Theophrasti* Ger., **1688.** Ray, Fascic., 26. Silverdale, T. Lawson; and often repeated. As *P. rupicola*, **1872.** Rep. Bot. Ex. Club, 1871, p. 14. Silverdale, C. Bailey; and repeated **1875.** Rep. Bot. Ex. Club, 1872-3-4, p. 16; and repeated **1875.** Rep. Bot. Rec. Club, 1874, pp. 44 and 58. Exposed limestone rocks, Silverdale, Chas. Bailey. On limestone rocks and in the woods, Silverdale, A. Wilson. From shore rocks to high up on Castlebarrow, say over 250 feet.

Pyrus Aucuparia Ehrh. **1864.** Bot. Chron., 74. Woods, common, C. J. Ashfield. Eaves Wood, etc.

Pyrus Malus L. In wood near Great Tarn, and in hedges.

Cratægus Oxyacantha L. Hedges and trees everywhere — possibly some really *monogyna* Jacq., but no flowers seen.

Cotoneaster integerrimus Medic. Foot of a boulder near Wood Well, in flower. Bird sown? 1901. One small plant on road-side between Jenny Brown's and Gibraltar, in flower, 1901.

Saxifraga tridactylites L. **1883.** Rep. Bot. Rec. Club, 1881-2, p. 248. Limestone rocks, Silverdale, A. Wilson. Castlebarrow, fine.

Parnassia palustris L. **1864.** Bot. Chron., 1864, p. 74. Bogs, frequent, C. J. Ashfield. I have not met with this species, but am told it grows about the Great Tarn.

Ribes Grossularia L. In hedges, Hollin Lane; Scout Wood; near the station, etc. Bird sown?

Ribes nigrum L. In hedge near Burton Well.

Sedum Telephium L. Side of road between the Row and Chapel Lane. Shore rocks below Magstone Wood, in bud, 22nd June 1901.

Sedum sexangulare L. Garden escape, on a wall near Cray Green. On railway bridge between Ford Lane and Waterslack Road.

Sedum acre L. Common from shore to top of Castlebarrow.

Callitriche stagnalis Scop. Bank Well; Tarn feeder.

Epilobium hirsutum L. Hedge ditches about Great Tarn.

Epilobium parviflorum L. Gathered from a stone heap, Trowbarrow Quarry.

Epilobium montanum L. Eaves Wood and hedge-sides.

Circæa lutetiana L. Eaves Wood; foot of rock near Wood Well, and other places.

Hydrocotyle vulgaris L. Bank Well. Great Tarn; damp place on Saltmarsh below Magstone Wood, 1901.

Sanicula europæa L. Eaves Wood, and possibly every other.

Conium maculatum L. Near the station, Silverdale, A. W.

Apium nodiflorum Reichb. Bank Well.

Conopodium denudatum Koch. Everywhere common.

Chærophyllum temulum L. Cove Lane.

Anthriscus sylvestris Hoffm. Near Waterslack Farm.

Crithmum maritimum L. **1864.** Bot. Chron., 74. Cliffs between Silverdale and Arnside Point, occasionally, C. J. Ashfield. Gone there now, at least on the Silverdale area.

Œnanthe Lachenalii C.Gmel. Saltmarsh east of Jenny Brown's Point, A. W.

Œnanthe crocata L. **1875.** Rep. Bot. Rec. Club, 1874, p. 44. Silverdale. I much regret having omitted to copy the name of the finder.

Angelica sylvestris L. Near Burton Well, and other places.

Heracleum Sphondylium L. Clearings in Eaves Wood.

Daucus Carota L. From shore upwards.

Hedera Helix L. On rocks, Castlebarrow, etc.; on trees, Eaves Wood.

Cornus sanguinea L. Frequent, A. W. Waterslack, Eaves, and Hagg Woods, and in many hedges. (As *C. Mas* L. **1872.** Rep. Bot. Ex. Club. Silverdale, C. Bailey.)

Sambucus nigra L. Eaves Wood and in hedges.

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Viburnum Opulus L. Fine near Great Tarn, Eaves Wood, etc.

Lonicera Periclymenum L. Woods and hedges; fine on Castlebarrow.

Lonicera Xylosteum L. Fine in Eaves Wood, but from its position, outside a garden wall, and its companions, probably of garden origin.

Galium Cruciata Scop. On almost every road-side.

Galium verum L. From shore upwards. Some plants much infested by a gall, *Eriophyes galiobius* Can. ?

Galium Mollugo L. From shore upwards; fine on common near Tarn.

Galium sylvestre Poll. Castlebarrow.

Galium palustre L. Side of stream between Burton Well and second field below.

Galium Witheringii (Sm.). **1887.** Rep. Bot. Rec. Club, 1884-5-6, p. 99. Near Silverdale, A. Wilson.

Galium Aparine L. Common almost everywhere.

Asperula odorata L. **1864.** Bot. Chron., 74. Woods, abundant, C. J. Ashfield. Eaves Wood, Waterslack Wood and others, and in coppice beyond south-east end of White Scar.

Asperula cynanchica L. **1864.** Bot. Chron., 74. Hill-sides and rocky places, plentiful; abundant below the 'Trough,' Trowbarrow, C. J. Ashfield. Silverdale, A. W. Yes, plentiful from shore bank to high on Castlebarrow.

Sherardia arvensis L. At shore end of Cove Lane amongst rubbish; under first gate into Magstone Wood, from the path to shore from main road.

Valeriana dioica L. Ditches about Burton Well; road-side ditch above Challan Hall.

Valerianella olitoria Poll. Hilly ground, Silverdale, frequent, A. W.

Scabiosa Succisa L. Field near Burton Well, etc.

Scabiosa Columbaria L. Silverdale, frequent, A. W.

Scabiosa arvensis L. Common at Silverdale, A. W. Side of new road, above smithy, etc.

Eupatorium cannabinum L. Ditches near Tarn, etc.

Solidago Virgaurea L. Eaves and other woods, common.

Bellis perennis L.

Aster Tripolium L. Saltmarsh, Silverdale, A. W.

Erigeron acre L. On one of the hills, Silverdale, A. W. Mr. Wilson has given me, of course, a more exact locality.

Antennaria dioica R.Br. Limestone hills, Silverdale, A. W., Castlebarrow, for instance. For some reason trippers who visit the district almost always pull up this species, so it is quite gone from one locality.

Inula Conyza DC. Shore rocks foot of Heald Brow, 1901. Near Challan Hall; Castlebarrow; Trowbarrow.

Achillea Millefolium L. Road-sides and fields.

Achillea Ptarmica L. Field near Burton Well, etc.

Chrysanthemum segetum L. A few plants in Eaves Wood clearing, **1898.**

Chrysanthemum Leucanthemum L. Sadly too common.

Chrysanthemum Parthenium Pers. An escape, about quarry near Bottoms.

Matricaria inodora L. Amongst rubbish on shore at Cove.

Tussilago Farfara L. Edge of Eaves and Waterslack Woods, and near Tarn and on road-sides.

Senecio vulgaris L. Common enough.

Senecio Jacobæa L. Lower slopes of Castlebarrow; Silverdale Green.

Carlina vulgaris L. Silverdale, rather common, A. W. Top of Castlebarrow, 270 feet.

Arctium minus Bernh. (Taken as *minus,* not in flower.) Eaves Wood.

Carduus pycnocephalus L. Coast near Brown's Houses, A. W.

Cnicus lanceolatus Willd. and ***C. arvensis*** Hoffm. Common from just above shore level.

Serratula tinctoria L. **1864.** Bot. Chron., 74. Plantation behind blacksmith's shop, C. J. Ashfield. Still there, 1898-1901.

Centaurea nigra L. Rough ground near Bank Well, and on road-sides.

Centaurea Scabiosa L. Near top of sea cliffs, south of Silverdale, and near the station, A. W.

Centaurea Cyanus L. Corn-fields, Silverdale, but rare, A. W. In an oat-field near Cray Green, 1901.

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Lapsana communis L. Eaves Wood, and on walls and dry banks.

Crepis virens L. Booked without locality, 1898.

Hieracium Pilosella L. Road-side near Elmslack and other road-sides.

Hieracium murorum L. What I took for this, on rocks beyond Cove, 1898.

Leontodon hirtus L. Near Burton Well, A. W.

Leontodon hispidus L. and ***L. autumnalis*** L. Road-sides and fields.

Taraxacum officinale Web. and ***Sonchus oleraceus*** L. Very common.

Tragopogon pratense L. Fine at Trowbarrow, 1898. Growing outside Silverdale Station, in road-side, 1900.

Campanula rapunculoides L. **1897.** Naturalist (April). Mr. F. A. Lees chronicles this as found near Little Hawes Tarn, 1881, by Miss K. Pickard. I saw in 1898 some drawn, delicate-looking Campanulas in a clearish place in the wood around the Little Tarn, possibly this species.

Campanula latifolia L. What I take to be this, but not in flower, 24th June 1901, Bottoms Wood.

Campanula rotundifolia L. Side of Eaves Wood, etc.

Calluna Erica DC. and ***Erica cinerea*** L. From shore bank to high on Castlebarrow.

Armeria maritima Willd. Saltmarsh near Silverdale, A. W. On the marsh from near railway to Westmorland boundary.

Primula acaulis L. Eaves Wood, etc.

Primula acaulis* × *P. veris. **1864.** Bot. Chron., 74. Recorded by Ashfield as *P. elatior,* and of frequent occurrence. Castlebarrow, fine.

Primula veris L. On road-side near Challan Hall, and on Burton Well Scroggs, in quantity.

Primula farinosa L. **1864.** Bot. Chron., 74. Boggy places about Hawes Tarn, C. J. Ashfield, and often repeated. Still there, 1901.

Lysimachia Nummularia L. Road-side, Silverdale to Jenny Brown's Point, A. W.

Glaux maritima L. Shore.

Anagallis arvensis L. Near the station, A. W. Fine in clearing, Eaves Wood. Road-side near Gibraltar.

Anagallis tenella L. **1864.** Bot. Chron., 74. Boggy ground near Hawes Tarn, C. J. Ashfield.

Fraxinus excelsior L. On the hill-sides and woods.

Ligustrum vulgare L. **1864.** Bot. Chron., 74. Apparently wild, C. J. Ashfield. Looks so on Castlebarrow and on shore rocks near Brown's Houses.

Erythræa Centaurium Pers. Castlebarrow ; Eaves Wood ; shore foot of Heald Brow ; ground about Wood Well.

Gentiana Amarella L. Lower slopes of Castlebarrow.

Symphytum asperrimum Wild. A cultivated fodder plant. Escape in Eaves Wood, from a cultivated patch. One plant, side of Town Field pathway, 1898. Four plants, 1901.

Myosotis cespitosa F. Schultz. Near Tarn.

Myosotis palustris Rehl. Shore bank, and on old pier or landing-place.

Myosotis arvensis L. Near Silverdale Station, A. W. Side of path below Castlebarrow.

Myosotis versicolor Reichb. Near the well at Wood Well.

Lithospermum officinale L. **1864.** Bot. Chron., 74. Between the Tarns, C. J. Ashfield. Hedge bank near Great Tarn, 1898. Hedge side, Red Bridge Lane, from station. Mr. Wheldon records it between Silverdale and Carnforth. I saw it in plenty on the road to Warton.

Volvulus sepium Jung. In hedges, near houses, e.g., Waterslack.

Convolvulus arvensis L. Side of railway line at Trowbarrow.

Solanum Dulcamara L. Eaves Wood, and on almost every road-side.

Lycium barbarum L. Wood, near Burton Well Scar, quite naturalised now.

Atropa Belladonna L. Fine on common near Challan Hall, 1898. Most of it cut down now, 1901. One plant on White Scar, 1901. One plant, Trowbarrow, 1897, W. Deason. A fine plant amongst brushwood on shore bank, 1898.

Verbascum Thapsus L. **1864.** Bot. Chron., 74. Road-sides occasionally, C. J. Ashfield. Near Silverdale, A. Wilson. Castlebarrow ; shore rocks foot of Heald Brow ; wood between Burton Well and Bottoms ; Trowbarrow Quarry.

Linaria repens Mill. **1887.** Rep. Bot. Rec. Club, 1884-5-6, p. 102. Sea coast, Silverdale, A. Wilson. **1897.** Naturalist,

127. Near Silverdale, 1881, Miss K. Pickard. Several places on the coast between Westmorland boundary and Jenny Brown's Point, A. W.

Linaria vulgaris Mill. Side of railway line and the tram-road at Trowbarrow.

Linaria viscida Moench. On the 'six-foot,' railway line at Trowbarrow. Silverdale Station, on ground opposite signal-box, 1898. Spreading, 1901.

Scrophularia oblongifolia Loisel. Near Burton Well, fine.

Scrophularia nodosa L. Eaves Wood.

Digitalis purpurea L. Burton Well Scroggs, etc.

Veronica serpyllifolia L. Near Hawes Tarn.

Veronica hybrida L. **1885.** Baker's Flora of Lake District, 152. Silverdale, Miss S. Beever.

Veronica officinalis L. On rocks at shore end of Magstone Wood, 1901.

Veronica Chamædrys L. Shore bank and road-sides, and a weed in gardens.

Veronica Anagallis-aquatica L. Between Silverdale and the station, A. W. Stream from Little Hawes Tarn; ditch-side of Great Tarn; side of pool, Quicksands Bridge.

Veronica Beccabunga L. Fine in ditch, beyond railing, north-west end of Hawes Tarn. In wet 'dub' at end of rocky slope from Trowbarrow, almost joining White Scar. Damp ground, Wood Well.

Euphrasia officinalis L. From shore upwards.

Euphrasia gracilis Fr. What I take to be this on Castlebarrow.

Bartsia Odontites Huds. On road-side, Silverdale Moss; last field, Silverdale to Heald Brow.

Pedicularis sylvatica L. Open ground before Wood Well, 1901.

Rhinanthus Crista-galli L. Rough ground near Wood Well; road-sides and fields.

Melampyrum pratense L. Eaves Wood, Waterslack Wood, and many other localities.

Melampyrum pratense var. ***latifolium*** Syme. **1875.** Rep. Bot. Rec. Club, 1874, p. 63. 'Widely spread in the neighbourhood of Arnside and Silverdale,' Chas. Bailey.

Pinguicula vulgaris L. **1864.** Bot. Chron., 74. 'Margin of Hawes Tarn,' C. J. Ashfield. Yes, almost up to White Scar Foot, and on the Moss.

Verbena officinalis L. Rock crevices on shore; fine on rocks near old landing pier, near Jenny Brown's Point, 1901. I saw it too in Mr. Wilson's locality, near Brown's Houses.

Mentha hirsuta Huds. Side of ditch near Hawes Tarn.

Mentha arvensis L. In field near Trowbarrow Quarry.

Origanum vulgare L. Seen about Silverdale district, A. W.

Thymus Serpyllum Fr. **1887.** Rep. Bot. Rec. Club, 1884-5-6, p. 103. Silverdale, A. Wilson. From shore to high up on Castlebarrow.

Calamintha Clinopodium Spenn. Common, A. W. Eaves Wood, near the station, and other places.

Salvia Verbenaca L. Road-side between Mount Lindeth and the village. In fields, side of path, Cove to Post Office.

Nepeta Cataria L. **1883.** Rep. Bot. Rec. Club, 1881-2, p. 248. 'Hedge bank near Jenny Brown's Point,' A. Wilson. One plant on the pier, or embankment, near Jenny Brown's, 1901.

Nepeta Glechoma Benth. Eaves Wood and road-sides.

Scutellaria galericulata L. **1864.** Bot. Chron., 74. 'Near Little Tarn,' C. J. Ashfield.

Prunella vulgaris L. Cove Lane, etc.

Stachys Betonica Benth. Side of path under Castlebarrow.

Stachys arvensis L. Heald Brow, Silverdale, A. W.

Galeopsis Tetrahit L. Booked without locality, but probably Eaves Wood clearing.

Lamium intermedium Fr. **1883.** Watson, Top. Bot., ed. ii., 314. 'West Lancs., Melvill.' Mr. Melvill kindly tells me the specimen was gathered at Silverdale, and seen by the late H. C. Watson; this applies also to

Lamium hybridum Vill. **1883.** Watson, Top. Bot., ed. ii., 315. 'West Lancs., Melvill.'

Lamium purpureum L. Railway bank near Trowbarrow, and road- and wood-sides.

Teucrium Scorodonia L. Eaves Wood and hedge banks.

Ajuga reptans L. Eaves Wood, etc.

Plantago major L. Road-sides and fields.

Plantago media L. Common about Silverdale, A. W. Path below Castlebarrow.

Plantago lanceolata L. Margin of Hawes Water and other places.

Chenopodium album L. On side of path near Elmslack, etc.

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Chenopodium Bonus-Henricus L. Outside last house before Silverdale Moss Road.

Atriplex Babingtonii Woods. Foot of rocks in Cove.

Salicornia herbacea L. A few plants on shore, Cove side.

Suæda maritima Dum. Saltmarsh near Silverdale, A. W.

Polygonum aviculare L. Road-side in village, and other neglected places.

Polygonum amphibium L. What should have been a damp place, before fork in road, Windy Scout and Carnforth, not far from Ordnance B.M. 24.6.

Rumex Acetosa L. Outside Eaves Wood, and field borders and road-sides.

Rumex Acetosella L. The same.

Daphne Laureola L. Was to be found in one of the woods in 1897. Name withheld.

Euphorbia Helioscopia L. In oat-field, side of path, Cray Green to Hagg Wood side. Side of Silverdale Moss Road, 1901.

Euphorbia Peplus L. In cultivated fields and gardens as a weed.

Euphorbia exigua L. Corn-fields, Silverdale, A. W. A few plants near quarry in Bottoms Lane; a nice patch on opposite side of the lane nearer the farm, 1901.

Mercurialis perennis L. Common, woods, lane- and field-sides.

Ulmus montana Stokes. In the woods and in field-sides.

Humulus Lupulus L. Coast near Brown's Houses, A. W. Hedge near Elmslack. Over hazels, Levens Bottom Wood —so, at any rate, I was told the wood was called. It is the land for sale, for building purposes, opposite Richmond's shop.

Urtica dioica L. Everywhere common. Fine in 'The Trough,' Trowbarrow.

Urtica urens L. Outside last farm, Waterslack to Silverdale Moss.

Parietaria officinalis L. **1864.** Bot. Chron., 74. Cliffs about Silverdale, plentiful, C. J. Ashfield. Rocks at the Cove, A. W. On the shore rocks, railway to Jenny Brown's Point; about the Cove and beyond; in the woods also, and high on Castlebarrow; and other localities.

Myrica Gale L. **1864.** Bot. Chron., 74. Plentiful near the Little Tarn, C. J. Ashfield. Really almost all round the Little Tarn, and side of the stream from this Tarn, etc.

Alnus glutinosa Medic. Side of tarn, and round Little Hawes Water.

Corylus Avellana L. In woods and hedges throughout the district.

Quercus Robur L. and ***Fagus sylvatica*** L. Planted, and as seedlings in the woods.

Salix pentandra L. Near Silverdale, A. W.

Salix fragilis L. Hedge near tarn, etc. The fine ***S. alba*** in cemetery has been planted there, I am told.

Salix Caprea L. Eaves Wood, Waterslack Wood, and on the mosses.

Populus tremula L. Eaves and other woods.

Juniperus communis L. **1864.** Bot. Chron., 75. Dry hills and road-sides, abundant, C. J. Ashfield. **1883.** Rep. Bot. Rec. Club, 1881-2, p. 248. Lime-hills, Silverdale, A. Wilson. Castlebarrow, Trowbarrow, and very fine near 'The Three Brothers' at Warton.

Taxus baccata L. **1864.** Bot. Chron., 75. Woods, very plentiful, C. J. Ashfield. **1883.** Rep. Bot. Rec. Club, 1881-2, p. 249. Silverdale, in woods and on the scars, A. Wilson. Eaves Wood, Castlebarrow, Trowbarrow.

Stratiotes Aloides L. Bank Well; seen there in 1868, J. C. Melvill. **1883.** Rep. Bot. Rec. Club, 1881-2, p. 249. Silverdale, introduced? A. Wilson. It may have been, but looks quite settled now.

Listera ovata R.Br. **1868.** Bot. Chron., 75. Woods, abundant, C. J. Ashfield. Mr. Wilson writes, 'frequent,' and so it is, in woods and on road-sides.

Spiranthes autumnalis Rich. **1864.** Bot. Chron., 75. Dry hilly pastures, frequent, C. J. Ashfield; and I hear that the Rev. J. A. Barnes saw it on a lawn at Silverdale.

Epipactis latifolia All. Woods near Silverdale, frequent, A. W. Eaves Wood and others, occasionally on road-sides.

Epipactis atro-rubens Schultz. On one of the limestone scars in Silverdale area. Specimens seen by Mr. Arthur Bennett. He tells me it is a new county record, but Mr. A. Wilson found it earlier in an adjacent parish.

Epipactis palustris Crantz. Found by Mr. Wilson in the area.

Orchis Morio L. Found by Mr. Wilson.

Orchis mascula L. Near the Tarn.

Orchis latifolia L. **1883.** Rep. Bot. Rec. Club, 1881-2, 249. Near Hawes Water, A. Wilson.

Orchis maculata L. Common near Wood Well.

Ophrys apifera Huds. **1864.** Bot. Chron., 75. Said to grow in several places about Silverdale, but I have not seen it, C. J. Ashfield.

Ophrys muscifera Huds. **1864.** Bot. Chron., 75. In wood, left-hand side of road, station to village, not unfrequent, C. J. Ashfield. Used also to be found in Eaves Wood and on Castlebarrow, now gone.

Habenaria conopsea Benth. **1864.** Bot. Chron., 75. Pastures, frequent, C. J. Ashfield. Silverdale, frequent, A. W. Near the Tarn, and on road-sides, as well as in fields.

Habenaria viridis R.Br. **1864.** Bot. Chron., 75. Hill-sides below 'The Trough,' Trowbarrow, abundant, C. J. Ashfield. **1887.** Rep. Bot. Rec. Club, 1884-5-6. Silverdale, frequent, A. Wilson. Ascending from pastures, just above shore level.

Habenaria bifolia R.Br. **1864.** Bot. Chron., 75. Rather frequent, C. J. Ashfield. Frequent, A. W. Ascending from pastures just above shore level.

VAR. ***chlorantha*** Bab. In the pastures above shore and on common near Challan Hall.

Iris Pseudacorus L. Wet field and ditch, side of line, between level-crossing and Slack Wood Farm; also ditch near The Pool.

Narcissus Pseudonarcissus L. Near Silverdale, A. W.

Tamus communis L. Eaves Wood, and many hedges.

Polygonatum officinale All. A few plants in Waterslack Woods. Ashfield's locality in Bot. Chron.—Middlebarrow Wood—is in Westmorland.

Convallaria majalis L. Castlebarrow; Waterslack and Hagg Woods. Mr. Wilson's locality—near Leighton Beck—is outside my area.

Allium ursinum L. Eaves Wood and others.

Scilla festalis Salisb. Eaves and other woods.

Paris quadrifolia L. **1864.** Bot. Chron., 75. Woods, common, C. J. Ashfield. Frequent near Silverdale, A. W. Bottoms Wood; Hagg Wood; wood behind Burton Well, etc. No variation in leafing seen.

Juncus squarrosus L. Shore of Tarn.

Juncus effusus L. Eaves Wood.

Juncus lamprocarpus Ehrh. Shore.

Luzula vernalis DC. Clearing in Waterslack Wood.

Luzula campestris DC. Fields above shore.

Typha latifolia L. Ditch near Silverdale Station, A. W. Field by side of railway line between Silverdale level-crossing and Slack Wood Farm.

Sparganium ramosum Huds. Bank Well.

(***Sparganium simplex*** Huds. **1875.** Rep. Bot. Rec. Club, 48. West Lancs., C. Bailey.)

Sparganium minimum Fr. **1884.** Rep. Bot. Rec. Club, 1883, p. 22. Little Hawes Water, Silverdale, A. Wilson. Bank Well, 1898.

Arum maculatum L. Woods and lane-sides.

Alisma Plantago-aquatica L. Feeder of Hawes Tarn; Silverdale Moss ditches; Bank Well; Stream near Quicksand Bridge.

Alisma ranunculoides L. Bank Well. Ditch on Silverdale Moss, 1901.

Triglochin maritimum L. Saltmarsh, Silverdale, A. W. Probably the same as my locality. Shore, cove-side, and shore, railway-side.

Potamogeton polygonifolius Pourr. **1883.** Rep. Bot. Rec. Club, 1881-2, p. 197. Ditches, Lancashire part of Arnside district, Chas. Bailey.

Zannichellia palustris L. Pool outside Wood Well. I can see no difference between this and a North Lancs. specimen, which Mr. Melvill pronounced '*Z. p.* (*vera*),' except in size.

Eleocharis palustris R.Br. Shore of Bank Well.

Scirpus lacustris L. Margin of Great Tarn, A. W. Very fine there in 1901, but eaten down a good deal by cattle. Ditch on Silverdale Moss Road.

Scirpus maritimus L. Side of pool, Quicksand Pool Bridge. Shore, Brown's Houses. Old landing-stage or pier near Jenny Brown's Point.

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Eriophorum angustifolium Roth. Hawes Water Moss.

Schœnus nigricans L. **1864.** Bot. Chron., 75. Plentiful near the Tarn, C. J. Ashfield. **1875.** Rep. Bot. Rec. Club, 1874, p. 69. Silverdale, Chas. Bailey, and repeated **1876.** Report for 1875, p. 110. **1883.** Rep. Bot. Rec. Club, 1881-2, p. 232. Abundant on the margin of Hawes Water, near Silverdale, A. Wilson. Castlebarrow.

Cladium jamaicense Crantz. **1864.** Bot. Chron., 75. Margin of Great Tarn, C. J. Ashfield. **1883.** Rep. Bot. Rec. Club, 1881-2, p. 249. Locality repeated, and in **1884.** Report for 1883. A. Wilson. Still there.

Carex vulpina L. **1875.** Rep. Bot. Rec. Club, 1874, p. 69. Silverdale, C. Bailey.

Carex echinata Murr. Eaves Wood and other places.

Carex digitata L. Rocky wood near Silverdale, A. W.

Carex panicea L. **1875.** Rep. Bot. Rec. Club, 1874, pp. 49 and 70. Silverdale, C. Bailey.

Carex sylvatica Huds. **1875.** Rep. Bot. Rec. Club, 1874, pp. 49 and 70. Silverdale, C. Bailey. Side of path, Eaves Wood.

Carex flava L. Waterslack Wood. Specimen seen by Mr. Melvill.

Carex Pseudo-cyperus L. **1883.** Rep. Bot. Rec. Club, 1881-2. Bank Well; and **1884.** Report for 1883, p. 24. Swamp, Little Hawes Tarn, near Silverdale, A. Wilson. The species was also seen many years ago by Mr. J. C. Melvill in these localities. It is fine at Bank Well.

Carex acutiformis Ehrh. (***paludosa*** Good.). Little Hawes Tarn.

Carex vesicaria L. **1884.** Rep. Bot. Rec. Club, 1883, p. 24. Swamp, Little Hawes Water, near Silverdale, A. Wilson. Silverdale, 1868, J. C. Melvill.

Milium effusum L. Eaves Wood.

Phleum pratense L. Side of road, Silverdale to Arnside. Chapel Lane.

Agrostis vulgaris With. Shore marsh.

Deschampsia cæspitosa Beauv. Fields and lanes.

Holcus lanatus L. Fields and lanes.

Avena pubescens Huds. On a wall in village.

Avena pratensis L. Shore bank, between Cove and shore cottages.

Phragmites communis Trin. Hawes Water, A. W. Seen there.

Sesleria cœrulea Ard. **1864.** Bot. Chron., 75. Hilly pastures, abundant, C. J. Ashfield. **1875.** Rep. Bot. Rec. Club, 1874, pp. 50 and 71. Exposed limestone rocks, Silverdale Green, C. Bailey. Limestone hills, abundant about Silverdale, A. W.

Cynosurus cristatus L. Road-sides and fields.

Kœleria cristata Pers. **1883.** Watson, Top. Bot., ed. ii., 484, note. Silverdale, Rev. Geo. Pinder. Limestone hills, frequent about Silverdale, A. W.

Melica nutans L. Limestone hills near Silverdale, A. W.

Melica uniflora Retz. Eaves Wood; Waterslack Wood.

Dactylis glomerata L. Road-sides and fields.

Briza media L. Castlebarrow, but common all over the district.

Poa pratensis L. Road-sides and fields.

Poa trivialis L. Road-sides and fields.

Glyceria fluitans R.Br. Bank Well; Wood Well.

Glyceria maritima M.&K. (***Sclerochloa*** Lindl.). Shore. Specimen seen by Mr. J. C. Melvill.

Festuca pratensis Huds. Shore bank.

Bromus sterilis L. Wall tops in village.

Bromus mollis L. Eaves Wood border.

Lolium perenne L. and ***L. italicum*** Braun. Fields.

Nardus stricta L. Fine near Tarn.

Pteris aquilina L. Very fine in The Trough, Trowbarrow.

Lomaria Spicant Desv. Waterslack Wood.

Asplenium Adiantum-nigrum L. Trowbarrow.

[***Asplenium marinum*** L. **1843.** Phytologist, 479. Silverdale, S. Simpson. **1859.** Moore and Bradbury, Nat. Print. Ferns, 8vo., ed. ii., 94. Sea Cave, near Silverdale. This probably refers to the 'Cow's Mouth,' which is not in Lancashire but Westmorland. None of the plant there now I am told.]

Asplenium Trichomanes L. Frequent, A. W. From shore rocks upwards.

Asplenium Ruta-muraria L. Frequent, A. W. From shore rocks upwards.

Athyrium Filix-fœmina Roth. Waterslack Wood, but not common in the district; probably rooted up.

Scolopendrium vulgare Sym. **1864.** Bot. Chron., 75. Frequent, C. J. Ashfield. Mr. Wilson says the same, and so I found it, but no varieties.

Ceterach officinarum Willd. **1859.** Moore and Bradbury, Nat. Print. Ferns, 8vo. ed., ii., 204. Silverdale, S. Simpson. According to the late Anthony Mason, in Aspland's Guide (**1869**), it was at one time obtainable at Silverdale. More recently it grew in some quantity in a certain place in which I sought for it in vain, but ultimately I found three plants, all very small, on the opposite side of the village.

Cystopteris fragilis Bernh. This also, I am told, was once much more common than now. It is recorded **1859.** Moore and Bradbury, ii., 259, from Silverdale, but no finder named, and on p. 265 the variety *dentata* Hooker. I have seen no Silverdale specimen, but have from Yealand Redmayn, and gathered it myself in Warton.

Lastræa Filix-mas Presl. In the woods and hedge-banks. No varieties seen.

Lastræa rigida Presl. **1843.** Phytologist, 478. Sparingly on the confines of the county, adjoining Westmorland, S. Simpson. **1859.** Moore and Bradbury, Nat. Print. Ferns, 8vo. ed., i., 207, Silverdale, and often repeated. Mr. Albert Wilson found it near Silverdale some time ago. I have seen it in his locality.

Lastræa spinulosa Presl. What I took to be this in the hedge at Little Hawes Water, but none was gathered, and the locality has not been visited since 1898.

Polypodium vulgare L. On walls, trees, and hedge-banks. I have seen the varieties *bifidum* and *denticulatum*.

Equisetnm arvense L. From just above shore level to well up on tram-road at Trowbarrow.

Selaginella selaginoides Gray. **1883.** Rep. Bot. Rec. Club, 1881-2, p. 249. Hawes Water, A. Wilson.

Chara fragilis Desv. Wood Well, 1898, 1900-1901, but, visiting the locality in August 1901, I found the well had been cleaned out on account of the drought, so that for the present the plant is in abeyance; this applies also to *Zannichellia palustris* L.

LIST OF LINCOLNSHIRE HEPATICS.

Miss S. C. STOW,
Court Leys, Brandon, Grantham.

I know of no list of Lincolnshire Hepaticæ, except that found in Mr. F. A. Lees' 'Outline Flora,' in the last (fifth) edition of White's 'Gazetteer and Directory of Lincolnshire.'

Mr. Lees always adds the personal mark of verification (!), but the vice-county only is indicated, and no definite parochial localities are given, but that defect, which occurred from want of space, has been remedied by its author here; as White's 'Lincolnshire' has been sold to Messrs. Kelly and will no longer be republished at given intervals, and copies are already difficult to obtain, I republish here the whole of Mr. F. A. Lees' List, which is of permanent interest, in the hope that someone will take up the Hepatics, or at least send me as many specimens as possible from different localities that our local distribution may be worked out. I wish to thank Mr. F. A. Lees for so generously supplying the data required.

Marchantia polymorpha L.

N. 1. Epworth, 1898, Sam. Hudson. 2. Frodingham, 1875, H. F. Parsons. 7. Frequent about Rasen, 1878, F. A. Lees; Benniworth, 1899, Rev. F. Alston. 10. Woodhall Spa, 1899, S. C. Stow.

S. 13. Whisby, 1892, J. B. Davy; Stapleford, 1899, S. C. Stow. 15. Grantham, 1898, H. Preston; Brandon, 1899, S. C. Stow.

Conocephalus conicus Neck.

N. 3. Cadney, 1898, Revs. W. W. Mason and S. Gasking. 8. Dock-gates, River-head, Louth, 1856, Bogg Coll. 5. Frequent about Bishop Bridge and the sluice gates of mill dams by the Rase, 1877-79, F. A. Lees. 11. Greenfield, Alford, and Tothby, 1890, J. B. Davy.

S. 15. Hough, 1891, J. B. Davy; Stoke Rochford, 1898, H. Fisher.

Lunularia vulgaris Mich.

N. 7. Tealby, Kingerby, and Osgodby, 1878, F. A. Lees.

S. 15. Little Ponton Warren, 1898, H. Fisher.

Riccia glauca L.

N. 7. Rasen neighbourhood, 1879, F. A. Lees.

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Frullania tamarisci L.

N. 11. Alford, 1892, E. Woodthorpe.

Frullania dilatata L.

N. 4. Stainton-le-vale, 1878, F. A. Lees. 7. Tealby and Kingerby, 1877-79, F. A. Lees. 11. Alford, 1892, E. Woodthorpe.

S. 13. Court Leys, 1898, S. C. Stow. 14. Cranwell, 1898, S. C. Stow. 15. Brandon, 1898, Sapperton, 1900, both S. C. Stow. 16. Careby Wood, 1900, S. C. Stow.

Lejeunea serpyllifolia.

N. 7. Linwood, Willingham, etc., 1877-79, F. A. Lees. 3. Howsham, 1892, Rev. E. A. W.-Peacock and J. B. Davy.

S. 13. Doddington, 1892, J. B. Davy.

Radula complanata L.

N. 7. Lissington, Wickenby, and Claxby Wood, 1878, F. A. Lees. 6. Stow, 1899, S. C. Stow. 11. Alford, 1892, E. Woodthorpe.

S. 13. Court Leys and Fulbeck, 1898, S. C. Stow. 14. Cranwell, 1899, S. C. Stow. 15. Great Ponton and Stoke Rochford, 1898, H. Fisher; Brandon, 1898, and Sapperton, 1900, S. C. Stow.

Porella platyphylla L.

N. 7. Tealby, Walesby, and Claxby Wood, 1877-79, F. A. Lees.

S. 15. Great Ponton, 1898, H. Preston.

Lepidozia reptans.

N. 7. Tealby, 1878, F. A. Lees. 11. Halton-Holgate, near Spilsby, F. A. Lees.

Odontoschisma Sphagni.

N. 3. Elsham, 'Wrawby Moor,' 1877-79, F. A. Lees. 7. Linwood Warren, 1877-79, F. A. Lees.

Given for S. also in Mr. Lees' List in 'Outline Flora.'

Cephalozia bicuspidata L.

N. 7. Frequent in the Rasen neighbourhood, 1878, F. A. Lees. 3. Howsham, 1892, Rev. E. A. W. Peacock and J. B. Davy. 8. Brackenborough Wood, 1899, J. Cordeaux.

S. 15. Grantham, 1898, H. Preston.

Cephalozia Lammersiana Hübn.

N. 7. Linwood peat warren, 1898, F. A. Lees.

S. 13. Sapleford Moor, 1898, S. C. Stow.

Cephalozia divaricata Sm.

S. 13. Stapleford Moor, 1898, S. C. Stow.

Lophocolea bidentata Nees.

N. 3. Howsham Wood, 1893, Rev. E. A. W. Peacock and J. B. Davy; Nettleton, 1898, S. Allett. 4. Great Coates, 1899, J. Cordeaux. 6. Stow, 1899, S. C. Stow. 7. Rasen neighbourhood and elsewhere, 1877-79, F. A. Lees; Southrey Wood, 1899, Rev. E. A. W. Peacock. 8. Louth, 1892, J. Larder; Brackenborough Wood, 1899, J. Cordeaux. 10. Woodhall Spa, 1899, S. C. Stow. 11. Well and Alford, 1890, J. B. Davy.

S. 13. Court Leys, Stapleford, 1898, Coleby, 1900, S. C. Stow. 14. Cranwell, 1898, S. C. Stow. 15. Great Ponton, 1898, H. Preston; Stoke Rochford, 1898, Rev. W. W. Mason; Stubton, 1898, and Sapperton, 1900, S. C. Stow. 16. Careby Wood, 1900, S. C. Stow.

Lophocolea heterophylla Schrad.

S. 15. Stoke Rochford, 1898, H. Fisher.

Lophocolea videritata Dumort.

S. 15. Woodnook, Grantham, Little and Great Ponton, and Stoke Rochford, 1898, all H. Fisher.

Kantia Trichomanis B.Gr.

N. 3. Howsham, 1892, Rev. E. A. W. Peacock and J. B. Davy. 7. Frequent in the Rasen district (Usselby, etc.), 1877-79, F. A. Lees.

S. 13. Stapleford, 1898, S. C. Stow.

Kantia arguta N.&M.

N. 7. Wickenby Holt, F. A. Lees.

Blepharozia ciliaris Dum.

N. 7. Linwood Warren and Willingham Woods, 1878, F. A. Lees. 3. Nettleton, 1899, S. Allett.

Blepharostoma trichophylla.

N. 7. Willingham, 1877-79, F. A. Lees.

Scapania nemorosa.

N. 2. Reed's Quarry, Broughton, 1898, F. A. Lees.

Diplophyllum albicans Dum.

N. 7. Frequent in the Rasen district, 1877-79, F. A. Lees.

S. 13. Stapleford, 1898, S. C. Stow.

Plagiochila asplenioides Dum.

N. 2. Broughton, 1879, F. A. Lees. 7. Tealby and Usselby, 1879, F. A. Lees. 11. Tothill, 1888, S. Allett.

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S. 'Hospital' plantations, south of Lincoln City, 1879, F. A. Lees. 15. Sapperton, 1900, S. C. Stow.

Chiloscyphus polyanthus L.

N. 8. Brackenborough Wood, 1899, J. Cordeaux.

Jungermannia inflata.

N. 7. Tealby Woods and Claxby, etc., 1877-79, F. A. Lees.

Jungermannia barbata.

N. 7. Linwood Warren, 1877-79, F. A. Lees.

Jungermannia ventricosa.

N. 7. 'Legsby' Woods, 1898, F. A. Lees.

Mylia Taylori Gray.

S. 13. Stapleford, 1898, S. C. Stow.

Nardia scalaris.

N. and S. Lincs.! F. A. Lees' List in 'Outline Flora.'

Blasia pusilla L.

N. 7. Rasen neighbourhood (Usselby, etc.), 1879, F. A. Lees.

Pellia epiphylla L.

N. 2. Twigmoor, 1892, Rev. E. A. W. Peacock and J. B. Davy. 7. Frequent about Kingerby and Osgodby, 1877-79, F. A. Lees. 8. Brackenborough Wood, 1899, J. Cordeaux. 10. Hundleby, 1890, J. B. Davy.

S. 13. Doddington, 1892, J. B. Davy; Court Leys, 1900, S. C. Stow. 14. Cranwell, 1898, S. C. Stow. 15. Little Ponton and Stoke Rochford, 1898, H. Fisher.

Pellia calycina Tayl.

N. 10. Kirkby Moor, Woodhall, 1890, J. B. Davy.

Aneura pinguis L.

N. 7. Frequent about Rasen, 1877-79, F. A. Lees.

Aneura multifida L.

N. 7. Tealby Churchyard and Willingham House ponds, 1877-79, F. A. Lees.

Metzgeria furcata L.

N. 7. Tealby and Claxby Wood, 1877-79, F. A. Lees.

S. 13. Court Leys, 1898, S. C. Stow. 14. Cranwell, 1899, S. C. Stow. 15. Stoke Rochford, 1898, H. Fisher; Brandon, 1898, S. C. Stow.

LINCOLNSHIRE FRESHWATER ALGÆ.

J. LARDER,

Louth; formerly Cryptogamic Secretary, Lincolnshire Naturalists' Union.

THE following list is the second part of notes for a future cryptogamic flora of Lincolnshire, and comprises all the records at present on the register of the Lincolnshire Naturalists' Union in this branch of botany. Though very incomplete, it may be found of some interest and value, as showing what has already been done in the county. A large number of the records have been made by Mr. T. Spencer Smithson, of Rochdale (chiefly in the Sturton district), and I am indebted to him, as well as to Mr. William West, for identifying specimens taken by myself. As with the moss list, so in this case, Mr. J. Burtt Davy (now of the University of California) commenced the compilation of this list. The numbers of the Lincolnshire Natural History Divisions are prefixed to the various localities.

Sciadium arbuscula. 9. Saltfleetby (J. Larder).

Nostoc cæruleum. 6 West. Sturton district (T. Spencer Smithson).

Nostoc commune. 13 West. Caythorpe (J. B. Davy).

****Tolypothrix coactilis.*** 6 West. Sturton district (T. S. Smithson).

****Spirulina oscillarioides.*** Sturton district (T. S. Smithson).

Rivularia dura. Sturton district (T. S. Smithson).

Protococcus pluviatilis. Sturton district (T. S. Smithson).

Scenedesmus acutus. Sturton district (T. S. Smithson).

Scenedesmus obtusus. Sturton district (T. S. Smithson). 9. Saltfleetby (J. Larder).

Scenedesmus quadricauda. 6 West. Sturton district (T. S. Smithson). 10 North. 'Jordan's Ponds,' Woodhall Spa (J. Larder).

Pediastrum boryanum. 6 West. Sturton district (T. S. Smithson). 10 North. 'Jordan's Ponds,' Woodhall Spa (J. Larder).

Pediastrum Ehrenbergii. 6 West. Sturton district (T. S. Smithson). 10 North. 'Jordan's Ponds,' Woodhall Spa (J. Larder).

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Closterium rostratum. 9. Saltfleetby (J. Larder).

Closterium moniliferum. Saltfleetby (J. Larder).

Closterium lunula. 6 West. Sturton district (T. S. Smithson).

Micrasterias denticulata. Sturton district (T. S. Smithson).

Cosmarium botrytis. Sturton district (T. S. Smithson). 9. Saltfleetby (J. Larder).

Cosmarium Meneghinii. 9. Saltfleetby (J. Larder).

Cosmarium Turpinii var. ***Lundellii.*** Saltfleetby (J. Larder).

Cosmarium granatum var. ***subgranatum.*** Saltfleetby (J. Larder).

Synedra acus. Saltfleetby (J. Larder).

Synedra pulchella. Saltfleetby (J. Larder).

Zygnema stellinum. 6 West. Sturton district (T. S. Smithson).

Spirogyra flavescens. 6 West. Sturton district (T. S. Smithson). 14 West. River Slea, near Sleaford (J. Larder).

Spirogyra tenuissima. 6 West. Sturton district (T. S. Smithson). 9. Saltfleetby (J. Larder). 14 West. River Slea, near Sleaford (J. Larder).

Spirogyra condensata. 9. Saltfleetby (J. Larder).

Mesocarpus pleurocarpus. 14 West. River Slea, near Sleaford (J. Larder). 'Not typical,' T. S. Smithson.

Mesocarpus nummuloides. 6 West. Sturton district (T. S. Smithson).

Staurospermum quadratum. Sturton district (T. S. Smithson).

****Volvox globator.*** 6 West. Sturton district (T. S. Smithson). 2 South. Manton Common (W. C. Brown). 6 East or 13 West. Lincoln district (Fairbank Catalogue).

Pandorina morum. 6 West. Sturton district (T. S. Smithson). 10 North. 'Jordan's Ponds,' Woodhall Spa (J. Larder).

Gonium pectorale. 6 West. Sturton district (T. S. Smithson).

****Merismopedia glauca.*** 9. Saltfleetby (J. Larder). 10 North. Woodhall Spa (J. Larder).

Lingbya turfora. 6 West. Sturton and Till Bridge (T. S. Smithson).

**Cœlosphærium Kutzingianum.* 10 North. 'Jordan's Ponds,' Woodhall Spa (J. Larder).

**Glæocystis ampla.* 9. Saltfleetby (J. Larder).

**Apiocystis Brauniana.* 6 West. Sturton district (T. S. Smithson). 9. Saltfleetby (J. Larder).

Vaucheria hamata. 6 West. Sturton district. (T. S. Smithson).

Vaucheria sessilis. Sturton district (T. S. Smithson).

Microspora floccosa. Sturton district (T. S. Smithson).

Microspora fugacissima. Sturton district (T. S. Smithson).

Cladophora fracta. Sturton district (T. S. Smithson).

Cladophora glomerata. Sturton district (T. S. Smithson).

Conferva bombycina. Sturton district (T. S. Smithson).

Conferva bombycina forma *genuina.* 9. Saltfleetby (J. Larder).

Conferva fontinalis. 6 West. Sturton district (T. S. Smithson). 10 North. 'Jordan's Ponds,' Woodhall Spa (J. Larder).

Conferva tenerrima. 6 West. Sturton district (T. S. Smithson).

Bulbochæte intermedia. Sturton district (T. S. Smithson).

Stigeoclonium fastigiatum. Sturton district (T. S. Smithson).

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Chætophora pisiformis. Sturton district (T. S. Smithson).

Mougeotia pleurocarpus. 9. Saltfleetby (J. Larder).

Coleochæte scutata. 6 West. Sturton district (T. S. Smithson).

Draparnaldia glomerata. Sturton district (T. S. Smithson).

Ulothrix zonata. Sturton district (T. S. Smithson).

Raphidium falcatum. 10 North. 'Jordan's Ponds,' Woodhall Spa (J. Larder).

Cocconeis placentula. 9. Saltfleetby (J. Larder).

Gomphonema curvatum. Saltfleetby (J. Larder).

Gomphonema dichotomum. Saltfleetby (J. Larder).

Diatoma elongata. Saltfleetby (J. Larder).

**Tetraedron regulare.* Saltfleetby (J. Larder).

1902 February 1.

NOTES on YORKSHIRE LEPIDOPTERA.

Proposed Supplement to the 'List of Yorkshire Lepidoptera.'—During the past few years the desirability of publishing a Supplement to the 'List of Yorkshire Lepidoptera' has been suggested to me over and over again, and as lately the appeal has been made oftener and more forcibly, I have decided, if I can secure the necessary co-operation of Yorkshire lepidopterists, to compile such supplement. I am probably in possession of all, or nearly all, of the published information since the issue of the original list in 1883, but a number of our lepidopterists must be in possession of much useful information which has not been published, and it is to them I now appeal. I want particularly full details of the captures of any species, should there be such, which are not included in the county list, and have not been recorded since 1883. Also lists of fresh localities for all local species, especially from districts which, up to 1883, had been little, or not at all, worked. Lastly, I shall be glad of particulars as to local variation of all species, even including the commonest.

All information should be forwarded to me as soon as possible.—GEO. T. PORRITT, Crosland Hall, near Huddersfield, 4th January 1902.

Hermaphroditism in *Crocallis elinguaria*.—I possess two hermaphrodite specimens of the Scalloped Oak Moth (*Crocallis elinguaria*) bred in 1899, from eggs obtained from Everingham in 1898. One has the left antenna male and the right female, and the other has the right antenna male and the left female. Both specimens are in beautiful condition.—WILLIAM HEWETT, York, 18th January 1902.

***Eupithecia isogrammata* at Doncaster: an Addition to the Yorkshire County List.**—Mr. L. S. Brady, of Sheffield, informs me that he found larvæ of *Eupithecia isogrammata* in the greatest profusion in flower buds of *Clematis vitalba* growing at Wadworth, near Doncaster, in August last. The species has not previously been recorded for Yorkshire, and is a very interesting addition.—GEO. T. PORRITT, Crosland Hall, near Huddersfield, 4th January 1902.

Since the foregoing was written, I have had an opportunity of looking through the manuscript of Mr. John Sumner's list of the Lepidoptera of Everingham, and find the species is included there. As it is several years since the list was compiled, the credit of adding the insect to the Yorkshire List is due to Mr. Sumner.—GEO. T. PORRITT, 21st January 1902.

Lepidoptera Captured near Middlesbrough in 1901.—The following are a few of the more noteworthy Lepidoptera that I have come across during the past season in the Middlesbrough district:—

Acronycta megacephala. A single specimen, 5th June, on Poplar tree trunk in Cambridge Road, Middlesbrough.

Calamia lutosa. A specimen taken off grass stem in garden, Linthorpe, Middlesbrough, on 14th September.

Mamestra albicolon. A single worn specimen at sugar in garden, Linthorpe, Middlesbrough, on 24th June. Another specimen 'poked' out of sand-banks at Redcar, on 4th July. The latter specimen was a ♀, and laid a quantity of ova about the 8th; these hatched out in due course, but I was unsuccessful in rearing them, the larvæ rotting off in the early stages in a way peculiar to a good many Noctua larvæ. I notice there is only one locality recorded for this insect in Mr. Porritt's Yorkshire list, but I have no doubt it would be taken all along the coast if sugared for at the proper time.

Pachnobia leucographa. Took three specimens, all ♀s, off Sallows in April, at Saltburn-by-the-Sea. I also took three specimens, all ♂s, in the same locality in 1900.

Tæniocampa populeti. Two worn specimens, taken off Sallows in April, at Kildale.—T. ASHTON LOFTHOUSE, The Croft, Linthorpe, Middlesbrough, December 1901.

SOME FLOWER FEATURES OF THE SOUTHERN AINSTY.

F. ARNOLD LEES, M.R.C.S., L.R.C.P.Lond.,
Leeds; Author of 'The Flora of West Yorkshire.'

Recently, in the course of a pleasant ramble from Ulleskelf, viâ Ryther Ferry, past Nun-Appleton and Appleton Roebuck to Steeton Hall—the old home of the Fairfax—and back to Bolton, I was somewhat struck by the number of doubtfully-native or certainly-introduced species which appear to be more than holding their own amid the indigenous vegetation. At Ryther I noticed the Scotch Thistle (*Onopordon*) finely-decorative of growth, cheek by jowl with luxuriantly trespassing Hop, its shoots snaking forward with threatening pythonic curve; and on the north bank of the Wharfe at Ryther Ferry quite a jungle of the yellow-green *Thalictrum flavum*—this last at least a native beyond doubt. But what surprised me most was to come upon several bushes, almost trees, of *Viburnum Lantana* by the roadside near the newly-erected Lodge at the north-west corner of Nun-Appleton Park. These were in fine fruit, the elderberry-like cymes heavy with oval discoid fruit of three colours—pinking green, bright red, and dull purple-black. I do not account the 'Mealy Wayfaring-tree' above suspicion, but here it plays the part of homester almost convincingly. The Mistletoe used to grow hereaway: does yet, I believe: why should not *Viburnum* be equally a relic, in this kindly climated, sequestered corner of the Vale? Who knows what the Bishops' foresters planted, or Fairfax's, when the Nunnery was installed hundreds of years ago? The whole district was a fen-level liable to inundation until the 'Bishop's dike' and 'Bishop's wood' were made for necessity and pleasure. This part of the Ainsty does not seem to have found its *natural* chronicler, albeit antiquarians have written more than enough about Steeton, Sherburn, and Cawood. Then, just to the east of Roebuck village is a rectangularly moated pasture, locally known as 'the Daffy field.' On the Ordnance Map the spot is marked 'Site of Brocket Hall,' but there is no aboveground sign of Norman masonry now (Roman tiles and a jar from there are in the Postmaster's possession); and *brocarte* in Norman-French meant a Roebuck which smells suspiciously like a rat, as if the village-name was modern, a translation of some Norman settler's patronym. I hint all this, tentatively, because it is not

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impossible that the Daffodil, the *Viburnum*, the Hop—ay! other integers in the local flora of To-Day, may bear some relation as effect from cause with medieval appropriators of the land.

But, certainly from a much more recent time must date the American Snowberry (*Symphoricarpus racemosus* Michx.) noted by me an hour later in profusion in the hedge of the highroad north of Colton bridge over the railway towards Steeton Hall, now a large farmhouse. This must have been introduced with quickset for the fence, but is now there for good, or until the vicinal boundaries are done away with. At the Hall itself *Euphorbia Lathyris*, the Caper-spurge (the semina were formerly used as a pickle), fruits as freely and sows itself, as the Walnut does both here and around Thorp Arch. Lastly, *mirabile dictu*, visiting a while back—not on this occasion—the old Roman Way of 'Rudgate' just north of St. Helen's Ford and south of Walton, I actually saw 'with these very eyes' a few plants of the Roman Nettle (*Urtica pilulifera*), the seeds of which must have been brought with the baggage-waggons of the Latin cohorts, and survived unrotted in the pavement over a thousand years! The 'way' had been disturbed for its stones, and lo! the Nettle with the Vervein had resuscitated. This makes the tale of a singular list of 'suspects.'

Of interesting indigens the district can claim few enough. On the inner courtyard and office walls of Steeton Hall (near South Milford) the Black Spleenwort (*Asplenium Trichomanes*) grows plentifully, with a very little *A. Adiantum-nigrum*—probably its nearest locality to Leeds. About the 'diaper' stones set in the walls of Ryther church the Wallrue (*Asplenium Ruta-muraria*) flourishes, with *Ranunculus sceleratus* in the flood-trench below the curious raised causeway along which worshippers of old time could alone approach the ancient Saxon-arch'd kirk, and it was also a plant of the dew-pond or cattle-plash within the rectangle of 'the Daffy field' before-mentioned. *Stachys palustris* was, I saw, in cornfield, mangel-broad and polder-dike, everywhere—telling likewise its tale of lands liable to inundation.

14.9.'01.

NOTE on COLEOPTERA.

***Chrysomela gœttingensis* in South Yorkshire.**—While walking from Edlington Church to the wood on the afternoon of the 1st August I picked up a dead specimen of this insect.

As Fowler considers the locality 'near Burton-on-Trent' the most northerly one, disregarding that of Stephens for 'Edinburgh' as 'probably an error' it may be as well to place the present occurrence on record as early as may be.—E. G. Bayford, Barnsley, 12th August 1901.

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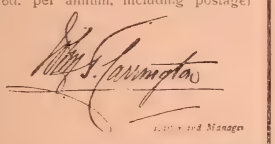

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Liverpool.

THE past decade has witnessed a great accession of interest in British Bryology, and the path of the student of our mosses has been smoothed by the publication of the greater portion of Dr. Braithwaite's splendid 'British Moss Flora' and Mr. H. N. Dixon's indispensable 'Handbook of British Mosses.' In addition the 'Moss Exchange Club' affords a means of exchanging notes and specimens, and its beginners' section holds out a helping hand to the less advanced members.

With all these facilities the increased interest is not surprising, and there is reason to hope that in the future more attention will be devoted to the larger critical genera, such as *Sphagnum,* and the subjects of the present paper. Much remains to be done in identifying our forms with those described by Continental botanists, and in tracing their comital distribution in the British Isles. The lists of localities in Mr. Horrell's 'European Sphagnaceæ' afford a useful starting-point for the former, but none of our books deal at all exhaustively with the latter. In this paper I propose to deal with the Harpidia of the Northern Counties of England only, as my knowledge of the remaining counties and their botanical workers is very limited. I am very largely indebted to Mons. Renauld for much of the information given below—not only to his masterly exposition of these plants in his 'Monograph of Harpidium' in Husnot's 'Muscologia Gallica' (which I have freely quoted from), but also for many critical notes and much labour in verifying and naming specimens. Mr. H. N. Dixon has also rendered me much assistance, and has not only named or confirmed the names of specimens, but has frequently kindly supplied interesting examples for comparison.

It was thought unnecessary to figure the leaves and cell structure, these having been already delineated in various descriptive works, and especially in 'Muscologia Gallica.' The plates are from nature prints of actual specimens, by Mr. John Marten, of Chatham, and are intended to give an idea of the general habit of the various forms. Some of them are, however, so variable that it is impossible to do justice to them with a single figure, and the limitations of space have necessitated the selection of small stems of some of the more robust species.

The plants of this section of the great genus *Hypnum* are of much interest on account of their variety of form and the beauty of many of the species. They present one of those natural associations of closely allied forms which are looked upon by the mere collector as stumbling-blocks, and dubbed 'critical,' but which are of the highest interest to the real student, the continuity of the chain of forms permitting the study of the origin or limitations of species under the most favourable conditions.

The Harpidia are usually readily distinguished from their allies by their tall erect or floating stems, often pinnately branched, without tomentum or paraphyllia, usually hooked at the apex of stems or branches. The leaves are more or less falcate-secund or circinate, generally with fine points, and the cells linear above, at basal angles shorter subquadrate, more or less inflated, and frequently forming well-marked auricles. Their tints vary through all the shades of green, yellow, brown, red, and purple, and they are sometimes very richly coloured. Nearly all the species grow in bogs, pools, and marshes, and their appearance is often greatly modified by the nature of the habitat, as is frequently the case with aquatic plants. This variability and the occurrence of numerous transition forms between the groups renders their determination unusually difficult. Mons. Renauld emphasises the fact that it is impossible to satisfactorily name all such intermediate states. He says in a recent letter that 'pretendre distinguer et nommer toutes le formes qui ne correspondent pas complétement aux variétiés principales est une pure chiméra et, en suivant cette method, on arriverait à la distinction de la form individuelle, c'ut à dire au cahos.' Sanio and other Continental botanists have endeavoured to define hybrids, and the system of classification adopted by the former is partly based on the occurrence of hypothetical hybrids.

It will be observed that the definition of *Harpidium* given above excludes those plants (*Cratoneuron*) distinguished by having stems clothed with paraphyllia or tomentum. I have followed Mons. Renauld in retaining *H. scorpioides*, and with him have rejected *H. callichroum*, which is placed by Sanio after *H. uncinatum*.

For the purpose of preservation, good and liberal specimens should be collected, so as to show the habit of the plants.

I have found that the principal forms and varieties maintained by Mons. Renauld, if of somewhat unequal value, nevertheless truly represent types that frequently recur, and

which when quite typical are readily identified, even by eye characters alone. His arrangement, which is followed here with one exception, is an eminently natural one, in which plants are not arbitrarily removed from their nearest associates by a slavish adherence to any single character at the expense of others equally important. In the exception alluded to, I have followed British bryologists in subordinating *Hypnum Wilsoni* to *H. Sendtneri* rather than to *H. lycopodioides*. In this country at least, the two former appear to be more closely connected. If there is a chain of forms linking *H. Wilsoni* with *H. lycopodioides* I cannot avoid the conclusion that the whole of the forms coming under these three names should be united to form an aggregate species, as the segregates do not differ so widely as do forms of *H. aduncum* and *H. fluitans*, which are united without question. Most of the following descriptions are based on those of Renauld in 'Muscologia Gallica,' but I have not hesitated to add to them from the writings of Dr. Braithwaite or Mr. H. N. Dixon, or from my own observation, where there was no doubt of the plants described being identical. In a few instances Mons. Renauld has given names to plants submitted to him which are not defined in his monograph. These I have endeavoured to describe briefly from my specimens, with the aid of his notes on them. Any defects in these descriptions must be attributed to me, but it may be assumed that the plants themselves are correctly referred to the varieties named on Mons. Renauld's authority.

In the lists of localities a note of exclamation after the collector's name indicates that a specimen has passed through my hands. The double sign is intended to imply that Mons. Renauld has seen the specimen and confirmed the name.

Section I.—Leaves Auricled, Decurrent.

In ascertaining the presence or absence of auricles great care is necessary. In some species they are difficult to detach with the leaves, but may be seen attached to the stem. In others, really without true auricles, false auricles are formed by the adhesion to the leaf base of portions of the cuticular tissue of the stem. These are carefully figured and described in Renauld's monograph in 'Muscologia Gallica,' and examples may readily be found in *H. vernicosum* and *H. revolvens*.

I.—***H. aduncum*** Hedw. (*Amblystegium Kneiffii* Schimp. Bry Eur. and of Braithw. Moss Fl.). Very polymorphous. Stems erect or floating, subsimple or vaguely branched, or regularly

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pinnate, from 5 to 40 cm., or more, in length. Leaves usually laxly arranged, rarely as strongly falcate as in the succeeding groups, sometimes patent, with entire or at most sinuolate margins, excavate and decurrent at basal angles. Cells lax at base, hexagono-rectangular, those of the angles dilated and forming distinct auricles. Outer perichætial leaves small and wider, inner large, long, and thinly nerved, plicate. Annulus broad. Peristome teeth transversely striate, densely trabeculate, bordered.

Perhaps no single character affords a reliable means of separating barren plants from *H. fluitans,* with which some of the forms are easily confused. The broader leaves, entire margins, shorter and laxer areolation will sometimes suffice, but in addition the cells at the insertion of the leaf *usually* pass insensibly into those of the stem—in *H. fluitans* the transition is abrupt. According to Renauld even this character cannot always be relied on.

Frequent on clayey or sandy soils (with us much rarer on peat, if not quite absent), at low elevations, seldom ascending above 100 feet.

GROUP ***typicum*** Ren.

Facies of slender forms of *H. fluitans* (*exannulatum*), *H. filicinum,* or *H. vernicosum.* Stems usually slender, leaves dense, more or less secund-falcate, oblong-lanceolate, or ovate-triangular, with a rather short subulate canaliculate acumen, the apical ones forming a hook at ends of stems and branches. Nerve thin and sometimes very short.

Forma ***falcata*** Ren. Tufted, erect, usually short (5-10 cm., sometimes taller). Stems divided, divisions more or less pinnate, hooked at the apices. Stem leaves falcate, oblong to ovate-lanceolate, acuminate, subulate, nerved above half-way. Usually taller than forms *gracilescens* and *tenuis*, and with longer and more gradually acuminate leaves.

8. West of Radbourne (57), W. R. Linton!

9. Southport (59), Holt!! Wheldon!! St. Annes (60), Wheldon!

10. Coatham Marshes (62), Ingham!! Clifton Ings (62), Ingham! Quarry near Knottingley (63), Ingham!

Forma ***lævis*** Boul. Pale or yellowish green. Stem erect (6-10 cm.). Stem leaves erect appressed, slightly secund above, acumen not flexuose. The extremities are scarcely hooked. The transition from group *typicum* to var. *pungens.*

10. Barlby (61), Ingham!

Forma ***gracilescens*** Ren. (*H. aduncum* var. *gracilescens* Schimp.). Stem erect, shorter (5-8 cm.). Leaves shorter, from a more dilated base, suddenly narrowed to a short acumen, often undulate or folded at its base. Nerved about half-way. Basal sinus somewhat wide and shallow.

8. Ropsley (53), S. C. Stow!

9. St. Anne's (60), Wheldon!! Ainsdale (59), W. Wilson!

10. Clifton Ings (62), Ingham (teste Dixon). Coatham Marshes (62), Ingham!

Sometimes the auricular cells in this and var. *falcatum* become yellow and incrassate when growing in maritime situations, and are then liable to be mistaken for an analogous form of *H. Sendtneri*, the var. *gracilescens* Schimp., but the latter may be distinguished by its firmer texture and stouter nerve.

Forma ***tenuis*** Ren. (var. *tenue* Schimp. ?). In dense, depressed, yellowish tufts, intricately branched, more or less pinnate. Leaves very small, from an oval base rapidly contracted to a short recurved point. Nerve very short, sometimes rudimentary. Probably a starved form of the preceding.

9. Southport (59), Holt (Braithw. Moss Fl.).

10. [Knottingley (63), W. Ingham.]

Var. ***aquaticum*** Sanio. Stouter and more robust than any of the preceding, usually submerged, in large yellowish-green tufts. Stems 10-15 cm. Leaves larger (3½ to 4 mm.), more distant, falcate secund, with a long spreading, flexuose, gradually attenuated acumen. Nerve wider, ceasing in the base of the acumen. Cells longer, the basal ones sometimes opaque.

9. Southport, and near Hightown (59), Wheldon!! Catforth (60), H. Beesley. Birkdale (59), W. Wilson! (ex herb. E. C. Horrell).

10. Brick-pond near Bedale (65), Wheldon!

Var. ***diversifolia*** Ren. MS. Somewhat rigid, regularly pinnate, 6-10 cm. high. Leaves markedly dimorphous, those of the stem, from an ovate-lanceolate base prolonged into a long slender acumen, erect secund, subfalcate at the apex; those of the branches much smaller, more suddenly acuminate, falcate-secund. Auricular cells frequently with thickened walls, less hyaline, especially in maritime situations.

9. West Kirby (58), Wheldon! Ainsdale, and to the North of Southport (59), Wheldon! Between Lytham and St. Anne's (60), Wheldon!!

10. Coatham Marshes (62), Ingham!! Selby (61), Ingham!!

GROUP ***Kneiffii*** Ren.

(*H. aduncum* * *Kneiffii* Boul. *H. aduncum Blandowii* Sanio ex parte).

Facies not or only indistinctly harpidioid. Usually larger plants than those of the last group. Leaves ordinarily lax, the lower erect or spreading, or slightly secund here and there, the upper much wider and shorter, ovate, acuminate, with a flat point.

Var. ***pungens*** H. Mull. Yellowish green. Stems procumbent, simply divided or slightly ramulose. Leaves erect, subimbricate, the apical ones appressed, forming a cuspidate point, which is straight or slightly curved. Leaves oblong to oval oblong, the lower ones ovato-lanceolate and more spreading. Upper cells long and linear, lower but little dilated. Apparently rare with us.

9. Pits between Knutsford and Thelford (58), Holt!

The only other British specimen I have seen was collected near Stanion (32) by Mr. H. N. Dixon.

Var. ***polycarpon*** Bland. Green. Stems procumbent, much divided, divisions numerous and slender, sometimes fastigiate, not pinnate. Leaves patent or erect, slightly curved at the point, hardly falcate except at the apex of the branches, oval-deltoid or oval-oblong, shortly acuminate, very decurrent, the lower oblong lanceolate, those of the branches often secund. Cells oblong-linear, short, suprabasal lax, quadrate. Fruit apparently rare, but when fructiferous the setæ are very numerous.

9. Near Morecambe (60), Wheldon! Walton, near Liverpool (59), Wheldon!!

10. Near Scarborough (62), Wheldon! Naburn (61), Ingham.

Var. ***attenuatum*** Boul. Rich bright green. Stems very slender, elongated, hardly pinnate, intricate. In drier situations more rigid and depressed, of a less lively green, resembling a miniature form of the preceding. Stem leaves short, deltoid, patent, and recurved at the point, with a short nerve tending to become forked. Auricles of the branch leaves usually almost or quite obsolete.

The habit of this plant is very distinct, recalling that of *Amblystegium Kochii*. Apparently rare.

9. Burscough (59), Wheldon!! A poor state in half dried-up pools. Catterall, near Garstang (60), very fine and typical, A. Wilson!!

Var. ***intermedium*** Schimp. Green or yellowish-green. Stems submersed, elongated, distantly branched, with distant leaves, or shorter with leaves more imbricate. Leaves very variable, sometimes erect, sometimes spreading, scarcely secund; the lower lanceolate, the upper oblong, acuminate. Cells shortly linear, rather longer than in var. *polycarpon,* and it forms a connecting link between that and the next group. Marshes, ponds, and ditches on a sandy or clay soil.

8. Kirkby-on-Bain, near Woodhall Spa (54), S. C. Stow! Near Whitwell and Sandacre (57), W. R. Linton!

9. Burscough, Ince Blundell, Crossens, Walton, and Kirkby (59), Wheldon!! Southport (59), Holt! Near Bidston (58), Wheldon! Garstang and Thrang Moss (60), A. Wilson!

10. Coatham and Naburn (62), Ingham! Near Romanby (62), Wheldon!

Forma ***penna*** Sanio. Yellowish green, rather robust owing to the more dense foliation, tufted, with numerous short pinnate branches.

9. Warbreck Moor, near Walton (59), Wheldon!! Pond near Oldham (59), Wheldon!

Forma ***laxifolia*** Ren. (var. *laxifolium* Sanio). Slender, elongate, with more distant leaves, the apical ones appressed subconvolute, forming a falcate cusp.

8. Caythorpe (53), S. C. Stow!

9. Walton near Liverpool, and Rainford (59), Wheldon!! Southport (59), Holt (teste Sanio)! Hale Moss (58) Holt. Ashton, near Preston (60), H. Beesley!

10. Bedale (65), Wheldon! Coatham (62), Ingham. Northallerton (62), Wheldon!

GROUP ***pseudo-fluitans*** Sanio.

(*H. aduncum* var. *laxum* Schimp. in Ren. Rev. Harpid.).

Robust; mostly pinnate. Stem leaves distant, erect patent, less heteromorphous than in the preceding group, oblong lanceolate or lanceolate, gradually prolonged into a slender point. Nerve rather long, cells often very long, the enlarged cells of the angles occupying nearly all the leaf-base. The strongly decurrent auricles approach each other, forming between them a small suborbicular sinus. Closely resembling some forms of *H. fluitans.*

Var. ***paternum*** Sanio. Floating in deep ponds or ditches. Yellowish green, ochreous, or fuscescent. Stems long (10-40 cm.), rigid and robust, or compactly tufted and softer, regularly pinnate or nearly simple. Stem leaves distant below,

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erect or sub-patent, narrowly oblong-lanceolate, gradually narrowed into long, usually not twisted points. Leaves of the branches patent, except at the apices, where they are imbricate, forming an acute point.

9. Stretford (59), Holt! Southport (59), Holt. Wheldon!! Birkdale, Ince Blundell, and Walton (59), Wheldon!! St. Anne's (60), Wheldon!! Ashton (60), H. Beesley!

10. Strensall Common (62), Holt. Ingham! Burrill, near Bedale (65), Wheldon! Coatham Marshes (62), Ingham.

Note.—A very handsome state of this plant occurs at Birkdale, near Southport, with stems very long and elegantly plumosely pinnate from apex to base. Mons. Renauld has for the present withdrawn a provisional name given to it, as it has not been found elsewhere, but it remains very constant after several years' observation in the original locality.

Forma ***gracilis*** Ren. MS. Much less robust, slender, gracile, producing few branches, which are either simple or with a very few short distant pinnæ. Stem leaves narrower, very distant, loosely flexuose, spreading, or suberect, acuminate. Apical ones convolute forming a slightly curved cusp.

8. West of Radbourne (57), W. R. Linton!

9. Southport, Rainford, and Walton (59), Wheldon!!

10. Near Scarborough and Strensall Common (62), Wheldon!

[Var. ***flexile*** Ren. Stems emergent, more slender, flexuose. Leaves narrower, flexuose, sometimes subsecund, prolonged into a very long, fine twisted subulate point.

To be looked for. Plants approaching it are found at Southport and St. Anne's (Wheldon), Catforth (Beesley), Strensall Common and Church Fenton (Ingham), but Mons. Renauld has not accepted any of them as exactly his variety.]

11.—***Hypnum Sendtneri*** Schimp. (*H. aduncum* ε. *legitimum* Sanio). Dioicous. With us often deeply tinged with yellow or brown, and simulating forms of *H. revolvens,* more rarely of the deep green which Mons. Renauld describes as its usual colour. Stems erect, loosely cæspitose, sometimes elongated when growing in deeper pools. It varies greatly in size; and very slender forms occur which closely resemble some states of *H. aduncum* (*typicum*). Stems simple, slender, often regularly pinnate, the apices and branches hooked. Leaves crowded, regularly circinate or falcate-secund throughout, glossy, from an ovate base, lanceolate, longly acuminate, slightly flexuose and twisted when dry, not plicate, but sometimes lightly striate when dry, entire. Cells resembling those of *H. aduncum,* but slightly narrower on

account of the thicker cell walls, linear flexuose, obtuse, the basal ones with non-porose walls, the angular firmer, less hyaline, with incrassate walls, forming distinct decurrent orange or brown auricles. These latter vary considerably in size in different specimens, and when very small are sometimes difficult to detach with the leaves, and, remaining attached to the stem, are liable to be overlooked unless sought in situ. The capsule is longer and narrower than in *H. aduncum*. Grows in marshes, mostly near the sea, but also inland. I have not seen it at the elevations indicated in some of our Floras; nor on the grit moorlands of Lancashire, but Dr. Braithwaite states (British Moss Flora, Vol. III., p. 41) that it is not uncommon on the moors of North Yorkshire.

8. Kinder Scout (57), G. A. Holt. Carr Meadow (57), Holt.

10. Hale Moss (58), Wilson (Br. Moss Flora). A plant I have from this locality so labelled by Mr. G. E. Hunt is referred by Mons. Renauld to *H. revolvens* var. *intermedium*. Southport (59), W. Wilson. Birkdale (59), Wheldon!! Between Southport and Ainsdale several puzzling states of this plant occur, one with auricles nearly obsolete, another Renauld labels '*forma late auriculata.*' A third and distinct-looking form has the leaves secund, but much less falcate, not at all circinate. St. Anne's (60), Wheldon!! Here also occurs a form very closely resembling *H. Wilsoni* in facies, of which Mons. Renauld writes 'a la part du *H. Wilsoni,* et les caractères du *H. Sendtneri,* ouillettes grandes, cellules basilaires non poreuses.'

Forma ***vulgaris*** Sanio. Much more slender, but stouter than the forma *gracilescens* Sno. Stems several times divided, divisions pinnate. Leaves densely arranged, very glossy, strongly falcate-secund, from a widely ovate base, more suddenly narrowed to a long, strongly-curved point.

9. Netherton and Burscough (59), Wheldon!! St. Anne's (60), Wheldon.

10. Marsh, near Naburn (61), Ingham!

Forma ***trivialis*** Sanio. An elongated deep water form, with more distant leaves, less strongly falcate, or the points only reflexed from an erect base, from an oval-oblong base more gradually narrowed to a very long subulate point, which is flexuose or twisted; cells usually longer.

10. Southport (59), Renauld, in Hus. Musc. Gall., p. 374.

Var. ***giganteum*** Schimp. Syn., Ed. II. (*H. hamifolium* Schimp., Syn., Ed. II., ex parte.) This appears to be distinguished by a broader nerve, longer cells, a very long

setaceous acumen, and very small, badly-defined auricles. It has not yet been detected in Britain.

III.—***H. Wilsoni*** Schimp. Variously classed by different authors as a species or sub-species, sometimes under *H. Sendtneri,* at others under *H. lycopodioides.* If great weight is attached to one or two minute structural details, e.g., the more or less porose basal cells and the thickness of their walls, it might be subordinated to *H. lycopodioides*; but if the general habit, pinnate branching, more erect growth, and less-rugose leaves are taken into account, it must be held in these particulars to approach more nearly to *H. Sendtneri,* with which, in British specimens, it is much more easily confused. Grows in robust, golden-yellow tufts, 6-12 in. long, stems subsimple, with distant pinnæ, leaves rather more distantly placed, larger, oblong lanceolate, gradually tapering to a long slender acumen, concave, auricles less distinct, smaller, of fewer cells.

8. North Somercotes (54), Rev. W. W. Mason!!

9. Southport (locus classicus) (59), W. Wilson! Also at Ainsdale and Birkdale (59), W. Wilson! It is still abundant in these localities, Wheldon!! St. Anne's (60), Wheldon!!

10. Strensall Common (62), Holt (Br. Moss Flora).

Var. ***hamatum*** Schimp. Very robust and more closely and regularly pinnate; leaves larger and more regularly circinate, with a very long acumen, more densely crowded. Auricles very small.

9. Ainsdale and Southport (59), Wheldon!! St. Anne's (60), Wheldon!!

Mons. Renauld refers specimens collected at Lough Neagh, county Armagh, by the Rev. C. H. Waddell, to this variety, and Mr. H. N. Dixon kindly sent me a specimen from Castlethorpe (24)!! These appear to be the only British localities.

IV.—***H. lycopodioides*** Schwægr. (*H. aduncum* δ *molle* Sanio). Dioicous. In large depressed patches, very soft, golden or greenish yellow above, fuscous below. Stems little divided, branched irregularly, branches scarcely pinnate, few, hardly hooked. Stems really slender, but rendered very turgid-looking by the crowded concave leaves. In this respect it resembles *H. scorpioides,* but the tufts are never tinged with purple. It occasionally gives off very slender shoots, which are liable to be mistaken for *H. Wilsoni.* Leaves large, concave, secund-falcate, oval or oblong, more or less rapidly narrowed to a long fine acumen, slightly sulcate and rugulose when dry, entire, base broadly and not deeply excavate, angles very slightly decurrent.

Cells, upper linear, thin-walled, acute, basal long, rectangular, incrassate, porose, those of the auricles a little dilated, subhexagonal with coloured walls, not distinctly separated from the others.

9. Ainsdale and Southport (59), Wilson, Marratt, Holt, Whitehead, etc., where it still grows abundantly and occasionally fruits. In the first-named locality an unusually obese form occurs, the stems having a remarkably stout appearance due to the very densely crowded leaves. St. Anne's (60), Wheldon!!

10. North Riding of Yorkshire, Teesdale. Pilmoor (62), Baker; Spruce. Stockton Forest (62), Spruce; Wheldon! Strensall Common (62), Baker; Ingham! Skipwith Common (61), Ingham. Semer Water, near Hawes (65), Baker; Wheldon!

11. Prestwick Carr (67), Thornhill. Widdy Bank Fell (66), Baker; Ingham!

V.—[***Hypnum Capillifolium*** Warnst. (*H. aduncum* var. *Schimperi* Sanio). A marked feature of this interesting plant is its strongly excurrent nerve. Mr. Dixon refers here some specimens found in post-glacial deposits at Mundesley, Norfolk, by Mr. Clement Reid. It should be looked for in the north, as it is a boreal species.]

VI.—***Hypnum uncinatum*** Hedw. (*H. aduncum* Linn. *Amblystegium aduncum* Lindb.). Pale or yellowish green, decumbent or suberect, remotely pinnately branched, branches falcato-incurved at apex. Leaves long, strongly falcate-secund, toothed, from a truncate base broadly lanceolate, piliform subulate-acuminate, strongly plicate. Decurrent angles of small, not swollen, rectangular, hyaline cells. Perichætium very prominent, of erect, lanceolate, plicate, leaves, long nerved. Annulus of three rows of cells. Outer peristome teeth with a faint border, transversely striate. Autoicous. Frequent in subalpine places, on walls, tree trunks, and damp ground. Not a marsh plant. I have records of its occurrence in numerous localities in the following vice-counties:—57 to 60, 62 to 67, 69, 70.

Forma ***plumosa*** Ren. (var. *plumosum* Schimp.). More slender, greener, prostrate, more closely pinnate. Leaves narrower, often contracted above the base, with a long and fine circinate point.

9. Near Preston (60), H. Beesley! Greygarth Fell (60), A. Wilson.

10. Hebden Bridge (63), Crossland and Needham! Holwick (65), Wheldon! Beamsley Moor (63), A. Wilson.

11. Falcon Clints (66), Wheldon!

Var. ***plumulosum*** Schimp. Darker coloured, much more slender, prostrate, intricately branched. Leaves hardly at all striate, subentire, smaller and shorter. Capsule smaller.

10. Mickle Fell (65), Wheldon! Hebden Bridge (63), Crossland and Needham.

11. High Force (66), Ingham!

Hypnum fluitans Linn. Monoicous or dioicous. Pale or yellowish-green, passing sometimes to chestnut, purple, or brown. Stem varying from 10 to 30 cm. in length, usually hooked at the extremity, more or less regularly pinnate. Leaves frequently falcate, oblong or oblong lanceolate, sometimes narrowed below some distance above the insertion, terminating in an acuminate point, which is normally denticulate, sometimes dentate, more rarely sinuolate or subentire, smooth or slightly striate. Nerve generally entering the acumen, sometimes reaching the point or a little excurrent. Texture close. Cells linear, remaining elongate almost to the base. Basal cells passing abruptly to those of the stem, angular cells sometimes inflated forming swollen auricles more or less distinctly separated, and frequently extending to the nerve. Perichætial leaves entire, nerved, smooth. Annulus none. External teeth punctate or very feebly striate, scarcely limbate.* (See figs. 1 to 4, p. 91.)

Group ***Amphibium*** Ren. (*H. fluitans* δ *amphibium* Sno.).

Usually monoicous, often fertile. Tufts pale green, stems floating or in depressed patches, slender, slightly divided, occasionally imperfectly pinnate. Leaves rather distant, loosely appressed, flexuose or spreading, feebly secund below, terminal ones more falcate-secund, narrow, margin denticulate below or all round, and sometimes dentate above, rarely subentire. Nerve relatively narrow, rarely exceeding three-quarters, more usually reaching a little more than half-way, and sometimes still shorter, in some forms showing a tendency to become forked. Texture thin, cells linear, very narrow, little altered except at the extreme base, the angular cells very little dilated, forming badly-defined auricles which are very slightly or not at all swollen. Fruit stalk very long. The plants of this section are found principally in peat-bogs, and ascend from the level of the sea to over 2,000 feet in West Lancashire. Mature leaves from the best developed plants should be selected for examination. (See fig. 1, p. 91.)

* This arrangement, uniting *H. fluitans* and *H. exannulatum*, is not usually recognised by British bryologists, but there can be no question that it is a natural one, all the forms intimately intergrading.

Var. ***Jeanbernati*** Ren. (var. *paludosum* Sanio). The name *Jeanbernati* of Renauld (1879) takes priority over that of *paludosum* Sanio (1880), having been published a year earlier. Monoicous. Pale green above, sometimes pale reddish-brown below, slender, very little branched, loosely floating, or rather compactly tufted, forming depressed mats when the pools are partially dried in summer. Leaves rather distant, terminal falcate-secund, loosely appressed or feebly secund below, sometimes slightly spreading towards the base, narrow, oblong lanceolate, sinuolate denticulate, sometimes distantly dentate above, narrowed to a short acuminate point, which is sometimes wide, but occasionally narrower. Nerve narrow, reaching about two-thirds. Upper cells very long, those of the angles little dilated, forming very obscurely-defined auricles.

9. Woolston Moss (58), W. Wilson! Ex herb. E. C. Horrell. Hale Moss (58), Whitehead!! Abbotts Moss (58), Holt!! White Moss, Hindburn; and Harris End Fell (60), A. Wilson and Wheldon!! Bleasdale Fell and Marshaw (60), A. Wilson! Greenbank Fell and Greygarth Fell (60), A. Wilson and Wheldon!

10. Skipwith Common (61), Ingham!! Gibslack Moor, near Wadsworth (63), Needham and Crossland! Whernside (64), H. N. Dixon.

Forma ***tenella*** Ren. Musc. Gall., 1894 (var. *tenellum* Ren. Class. Harpid. in Revue Bryolog., 1881). Stems very slender, flexuose, filiform. Leaves distant, small, patent, divaricate, narrowly lanceolate. Bears the same relation to var. *Jeanbernati* that forma *gracilis* does to *H. aduncum* (*pseudo-fluitans*) var. *paternum*, and is sometimes mixed with the first-named. It was placed by Sanio under *H. aduncum pseudo-fontanum*.

9. Bleasdale Fell, near Calder Vale, and Harris End Fell, (60), Wheldon and A. Wilson!

10. Skipwith Common, W. Ingham!

Forma ***Holleri*** (Sanio) Ren. Pale green, in depressed patches. Tufts rather dense. Stems slender, flexuose, slightly and irregularly branched. Leaves distant, flexuose, spreading slightly, lanceolate, finely acuminate, slightly denticulate or subentire. Nerve weak and little exceeding the middle. Cells shorter. Angular cells smaller and auricles almost obsolete. This is the *H. fluitans* (*obsoletum*) var. *Holleri* Sanio, but Mons. Renauld has recently come to the conclusion, already hinted at in his monograph, that it is only a state of his var. *Jeanbernati*. Having had many opportunities of seeing the two plants growing, I have no hesitation in accepting this conclusion, and

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accordingly describe the plant here rather than in the group *obsoletum*. Many of the British forms hitherto referred here must be placed under var. *atlanticum* Ren.

9. Tatham Moor, Cotshaw Fell, and Hawthornthwaite Fell (60), A. Wilson!! Mallowdale Fell (60), Wheldon and A. Wilson!!

Forma ***condensata*** Sanio. Stems short and tufts compact. Appears to be merely a starved state of dried-up marshes.

8. Crowden Brook, Edale (57), W. R. Linton.

9. White Moss, Hindburn (60), Wheldon and A. Wilson!!

Var. ***atlanticum*** Ren. (Journ. Bot., 1901). Approaching the var. *Jeanbernati,* but differing in its glossy green colour, its leaves wider, oval, more suddenly narrowed to a shorter acumen and usually densely chlorophyllose. Nerve wider at base (58-64 μ as against 46-48 μ). Basal cells wider and shorter, gradually longer above, chlorophyllose. For a fuller description see Journ. Bot., 1901, p. 277, 'New Varieties of *Hypnum fluitans,*' by H. N. Dixon.

8. Kinder, near Hayfield, and Redcar Brook, above Dove (57), W. R. Linton!

9. River Wyre, Wyresdale (60), Albert Wilson!! Pendle Hill (59), Wheldon!! Calder Valley, above Oakenclough (60), A. Wilson! Longridge Fell (60), Wheldon! Black side of Tarnbrook Fell, Hare Apple Tree Moss, and Abbeystead Fell (60), A. Wilson and J. A. Wheldon.

10. Near Halifax, a large submerged form (63), Crossland!

Forma ***gracilis*** Ren. More slender, leaves smaller, but of similar form to the type. Nerve narrower, but the cells remain wider than in var. *Jeanbernati.*

10. Arncliff Wood (62), W. Ingham!!

It is probable that this variety, which has already been found in France (Lachenaud) and North America (Dr. Grout), will be found not only widely spread, but variable, and the var. *Holleri* may have to be subordinated to it. They require further study.

Var. ***elatum*** Ren. et Arnell. More laxly tufted than the last, loosely intricate and floating. Stems more robust, and more branched, the branches again pinnately divided. Leaves larger, more crowded, somewhat falcate, oblong or oblong lanceolate, truncate at the base, rather suddenly contracted to a rather wide and short acumen, denticulate. Nerve narrow, reaching three-quarters, or shorter. Cells long and narrow, auricles ill defined, their cells sometimes a little swollen. This approaches very closely to the var. *Jeanbernati,* but is taller,

more robust, less compactly tufted, with larger and broader leaves, and subpinnate branches.

9. Cockerham Moss, in deep cutting in the peat (60), Wheldon and A. Wilson!!

Var. ***gracile*** Boul. Tufts soft, green. Stems slender, gracile, slightly branched. Leaves distant, erect patent below, falcate-secund above, narrow, contracted at the base, with a long slender, sometimes filiform, acumen, which is denticulate or strongly dentate. Nerve thin, reaching a little beyond the middle. Auricles ill defined, their cells slightly swollen. Although often bright green when growing, it soon fades, and old herbarium specimens are usually more or less pale fuscous yellow. Ascends from sea level to over 2,000 feet in Lancashire and Yorkshire. Distinguished from the var. *Jeanbernati* by its narrower, more lanceolate leaves, with more slender points. A small-leaved form with more falcate leaves (forma *abbreviata* Ren.) occurs on Greygarth Fell and Ingleborough.

Another remarkable form with decurrent leaves occurs on Greygarth Fell which may merit description after further observation.

9. Pendle Hill (59), Wheldon! Longridge Fell (60), Wheldon!! Greygarth Fell, Botton Head Fell, and Whiteray Fell (60), A. Wilson!! Cockerham Moss (60), Wheldon and A. Wilson. Burn Moor (60), A. Wilson.

10. Near Boltby (62), R. Barnes! Ingleborough and Whernside (64), Wheldon! Skipwith Common (61), Ingham!! Ilkley Moor (63), A. Wilson. Beamsley Moor (63), A. Wilson.

12. Potter Fell (69), Rev. C. H. Waddell.

Forma ***laxifolia*** Ren. (*H. aduncum* var. *pseudo-fontanum* Sanio of Br. British Moss Flora). Pale yellowish green. Stems elongated, floating, intricate, with very short branches or nearly simple. Leaves falcate-secund above, more distant, flexuose patent below, strongly denticulate, narrowly lanceolate, prolonged into an extremely long filiform twisted acumen. Basal cells lax, angular rectangular, very decurrent as in var. *submersum* Schimp.

It seems impossible to unite this with *H. aduncum* without unduly straining all the characters of that plant. A comparison with *H. fluitans* (*amphibium*) var. *gracile* Boul. will at once make evident the fact that it is a deep-water form of that very variable plant.

9. Oakmere (58), Holt!!

Var. ***Payoti*** Ren. Tufts submerged, pale green, vinous red below. Stems long, slender, prostrate and intricately interlacing. Leaves rather distant, erect patent, slightly flexuose, not at all secund except at the extreme apex of the stems, narrowly oblong lanceolate, finely but shortly acuminate, slightly denticulate. Nerve reddish, thin, reaching sometimes three-quarters. Basal cells often a little thickened and coloured. Auricles strongly decurrent, sometimes a little swollen, but not abruptly separated from the rest of the lower cells. The habit of this plant is very marked.

9. [Greenbank Fell (60), Wheldon and A. Wilson!! This was not quite typical, but agrees better with this than any of our forms. Mons. Renauld said of our specimens 'ad var. *Payoti* accedens.']

Var. ***submersum*** Schimp. A slender, elongated floating form, with very distant, patent leaves, not falcate, from a broad base, with decurrent auricular cells, lax almost to the nerve, hyaline, but little dilated. We have seen no specimens of this collected in the North of England. Other forms are frequently erroneously referred to it. A plant from Boltby, North Yorkshire, collected by Mr. R. Barnes, approaches it nearly, but I have not had the name confirmed.

Var. ***setiforme*** Ren. Loosely tufted, submersed, of a glossy yellow green above, passing to red and brown. Stems of moderate length, straight, simple, or with a few very short pinnæ. Leaves erecto-patent, nearly straight below, and only slightly secund at the extremities, very long (5-7 mm.), lanceolate, gradually narrowed almost from the base, terminating in a long setaceous point, with large recurved teeth. Nerve narrow. Cells generally very long. Auricles small, of few slightly-inflated yellowish cells.

10. Flints Reservoir, Soyland, near Halifax (63), C. Crossland.

Referred to this var. originally by Mr. Dixon, and accepted by Mons. Renauld, as a form of var. *setiforme* somewhat approaching var. *gracile*. It seems sufficiently distinct in its colour and the erect spreading leaves, which are less narrowed below. The Soyland specimens have a shorter leaf point than the original specimens.

Var. ***Robertsiæ*** Ren. & Dixon and var. ***squalidum*** Ren. and Dixon, belonging to this group, should be looked for in the North of England. They are described in Journal of Botany, 1901, p. 277.

GROUP ***falcatum*** Ren.

(*H. fluitans β falcatum* Bry. Europ.).

Monoicous. Tufts yellow, passing to red or green above, becoming deep chestnut or brown below. Leaves falcate, strongly curved, crowded, more or less truncate based, sinuolate or slightly toothed above. Nerve wide and long. Texture firm, cells very long and narrow, those of the base and angles with incrassate walls, often coloured orange red, small, little dilated, shortly rectangular or quadrate, forming small more or less distinct auricles. These are composed of smaller more numerous cells than in the succeeding groups. (See fig. 2, p. 91.)

Var. ***falcatum*** Schimp. Tufts yellowish, more or less fuscous-reddish below. Stems of moderate length, erect, subsimple. Leaves rather closely arranged, falcato-recurved throughout, the lower lanceolate, upper oblong-lanceolate, with a shortly subulate acumen, involute below. Male flowers numerous.

9. Abbotts Moss (58), Holt! Pendle Hill (59), Wheldon! Harris End Fell, Calder Valley above Oakenclough, Tatham Moor, Lower Bleasdale, near Garstang,!! and Fairsnape Fell (60), A. Wilson! Tarnbrook Fell (60), A. Wilson and Wheldon!

10. Hebden Bridge (63), Crossland and Needham! Ramsgill Beck, Nidderdale (64), J. S. Wesley! Simon Seat, Wharfedale (63), Dixon. Ilkley Moor (63), A. Wilson. Skipwith (61), Ingham.

11. Burnhope Seat (66), Ingham! (teste Dixon).

12. Potter Fell (69), Rev. C. H. Waddell!

Var. ***anglicum*** Sanio. (*H. fluitans anglicum homophyllum Holtii* Sanio. *H. fluitans* var. *Holtii* Sanio of Braithw. British Moss Flora). Stems elongated, rather rigid, yellowish green above, fuliginose-fuscescent below, pinnate with numerous short, crowded, erect branches. Leaves erecto-patent, lanceolate, with a long flexuose subulate acumen. Auricles approaching more nearly those of the Group *Amphibium*, margin remotely denticulate. Habit and colour very distinct.

Mons. Renauld looks upon this as a transition form connecting the Groups *Amphibium* and *falcatum*, but places it with the latter on account of its colour.

9. Abbotts Moss (58), G. A. Holt (locus classicus), June 1887.

Var. ***ovale*** Ren. MS. (in litt. ad Wheld.). Journ. Bot., 1901, p. 299. Dark yellowish green, suffused with smoke brown, in

habit resembling small forms of var. *atlanticum,* but with narrower cells and of a more lurid colour. Stems slightly branched, procumbent. Leaves from an oval base, rather suddenly contracted to a moderate recurved, rather fine subentire acumen, which is canaliculate below. Basal cells slightly incrassate, sometimes coloured, auricles almost obsolete, of small square cells when present. Nerve reaching base of acumen, but often shorter, and sometimes forked, especially in branch leaves, in which it is sometimes nearly obsolete. Perhaps more closely related to Group *Amphibium*?

9. Greygarth Fell, at 1,800 feet (60), Albert Wilson!! Pendle Hill (60), Wheldon.

10. Denton Moor (65), A. Wilson! Warley, near Halifax (63) (somewhat doubtful), Crossland! Falcon Clints (66), Wheldon!

Var. ***Arnellii*** Sanio. In deep, soft tufts, green on the surface, brown in the interior. Stems floating, regularly and sometimes closely pinnate. Leaves long, narrowly oblong-lanceolate, with very long attenuated denticulate points. Nerve very strong, reaching about three-quarters or more. Upper cells long and narrow, with thin walls; basal rectangular, incrassate, angular ones yellowish, with incrassate walls, not dilated; forming auricles which are sometimes rounded on the outer margin, but not always.

This was placed by Sanio in the Group *Amphibium,* but we follow Mons. Renauld in retaining it here.

10. Strensall Common (62), Holt. Skipwith Common (61), Ingham! (teste Dr. Braithwaite).

Group ***exannulatum*** Ren., Musc. Gall.

(*H. fluitans* var. *exannulatum* Ren., Rev. Harpid., 1879. *β exannulatum* Sanio, 1883. *H. exannulatum* Guemb., 1854).

Dioicous. Yellowish green, often purpurascent, more or less compactly tufted, erect or procumbent, pinnate, with circinato-incurved branches. Leaves crowded, glossy, uncinate, secund, denticulate or subentire, basal margin usually serrate, sometimes lightly striate, especially when dry. Nerve strong and wide, reaching nearly to the apex, and sometimes slightly excurrent. Cells often wider than in the preceding group, the angular ones dilated, forming large swollen auricles, which are hyaline, distinct, and sometimes extend to the nerve. (See fig. 3, p. 91.)

Var. ***pinnatum*** Boul. Yellowish green or green. Stems of moderate length, erect, rigid, pinnate. Leaves falcate-secund,

oval or oval-oblong, or ovate-lanceolate, with a slender acumen of varying length, denticulate above, serrate below. Nerve reaching high in the acumen. Auricles large, swollen, hyaline, rounded, of rather numerous cells, with usually thin walls.

8. Hulland Moss and Brackenfield Green (57), W. R. Linton!

9. Hale Moss (58), Whitehead! Pendle Hill (59), Wheldon! Greygarth Fell, Borwick, Calder Valley, Tarnbrook Fell, Bleasdale Fell, etc. (60), A. Wilson!! Mallowdale Fell and White Moss, Hindburn (60), Wheldon and A. Wilson!!

10. Holwick Fell (65), Wheldon! Ingleton Fell (64), Wheldon! Terrington Carr (62), W. Ingham.

12. Benson Knot (69), C. H. Waddell.

Forma ***acuta*** Sanio (*H. exannulatum acutum assimile* Sanio). Leaves wider, more shortly pointed, less strongly falcate. The connecting link between var. *pinnatum* Boul. and var. *brachydictyon* Ren.

This and the next are the two forms referred to by Mons. Renauld in the note to var. *pinnatum* in Muscologia Gallica, p. 385.

9. Whittington Moor (60), A. Wilson!! Gavell's Clough (60), Wilson. Occurs also in the South of England (Pirbright Common (17), Sherrin and Horrell)!! and elsewhere.

Forma ***stenophylloides*** Ren. Stems longer, leaves narrower, with a longer and finer acumen, the upper leaves of the stems and branches strongly falcate. The passage from var. *pinnatum* to the var. *falcifolium* Ren. (Group *Rotæ*), which it resembles in its long falciform leaves and frequently very regularly pinnate stems.

8. Harland Edge, Beeley (57), W. R. Linton!

9. Tatham Moor, Hindburn (60), A. Wilson!! Tarnbrook Fell and Fairsnape Clough (60), A. Wilson. Ireby Fell, Wheldon and Wilson.

10. [Wearhead (66), W. Ingham. An anomalous form which I place here with some hesitation.]

Forma ***gracilescens*** Ren. Less erect and less robust generally. Stems more slender, less regularly pinnate, sometimes subsimple.

8. Hulland Moss (57), Rev. W. R. Linton (?).

9. Abbotts Moss (58), James Cash!! Woolston Moss (58), Wm. Wilson!

10. Strensall Common (62), Wheldon! Skipwith Common (61), W. Ingham. Ilkley (64), H. N. Dixon! Riccall Common (61), Wm. West!

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Forma ***montana*** Ren. Stems rigid, much divided, rather short and stout, the divisions irregularly pinnate. Deep fuscous brown, the very strongly-hooked tips of the stems and branches only being of a yellowish green. Leaves very strongly falcate throughout, at the apices almost circinate, firm in texture from a broadly-ovate base, suddenly narrowed above to a long, involute recurved point. Nerve strong, from a very broad base, prolonged into the commencement of the acumen.

This form, of which I have seen no description, has a well-marked facies, recalling some forms of *Hypnum revolvens*. In its very strong nerve and rather shorter cells, it approaches the var. *brachydictyon*, but the general habit and shape of the leaves are quite different.

8. Hulland Moss (57), W. R. Linton!

9. Walton Bog (58), W. Wilson! ex herb. E. C. Horrell. Hale Moss (58), Cook and Whitehead!!

10. Denton Moor, Ilkley (64), A. Wilson! Saltonstall Moor, Halifax (63), Crossland! Near Cronkley, Teesdale (65), Wheldon!

Forma ***polyclada*** Ren. MS. Growing in large, densely-compact cushions, of a glossy golden-green colour above, pale fuscescent below. Stems rather robust, several times divided, the divisions densely ramose, with crowded, erect, not bifarious branches, which are usually falcate, and strongly hooked at the extremities. Leaves, lower narrowly lanceolate, upper from an ovate base gradually contracted into a long, slender recurved acumen, margin serrulate below, subentire above. Auricles very distinct, of inflated cells, sometimes extending to the nerve, which latter is often tinged with orange-red on the line of insertion, the coloration being confined to the extreme base and middle, and is rarely, but sometimes faintly, traceable in the auricles. The walls of the auricular cells in the upper leaves are thin and hyaline, in the lower a little incrassate, and occasionally yellowish. Habit very distinct, both as regards the large cushions in which it grows, the golden colour, the method of branching and the very silky texture. It is intermediate between vars. *pinnatum* and *purpurascens*.

8. Umberley Brook, Chatsworth (57), W. R. Linton!

9. Mallowdale Fell (60), Wheldon and A. Wilson!! Gavell's Clough and Tarnbrook Fell, Wyresdale (60), A. Wilson!

12. [Barbon Fell (69), E. D. Marquand and C. H. Waddell! This was not quite typical.]

Var. ***brachydictyon*** Ren. Green, in broad patches, laxly tufted. Stems slender, erect, pinnate. Upper leaves short, feebly secund, oval at the base, often sulcate, terminating in a broad short acumen. Nerve thick and wide. Cells short, oblong-sublinear, the lower very short, those of the large, rounded, swollen auricles numerous, dilated with usually thin walls.

Frequently referred to *H. aduncum,* on account of its short lax basal cells. The firmer texture, thicker nerve, and occasionally denticulate margin will assist in identifying it.

9. Morley Common and Oakmere (58), Wm. Wilson! Rainford Moss and Netherton (59), Wheldon!! Longridge Fell (60), Wheldon!! White Moss, Hindburn (60), Wheldon and A. Wilson.

10. Strensall Common (62), Wheldon! Skipwith Common (61), Ingham! Pilmoor (62), W. Ingham!

Var. ***purpurascens*** Schimp. Often entirely purple, but sometimes purple and green. Stems rather compactly tufted, densely branched. Leaves crowded, more or less falcate, oblong-lanceolate, with a moderate point, striate, small. Nerve purple, reaching nearly to the apex, stout. Cells of medium length, between those of the vars. *pinnatum* and *brachydictyon,* but seeming narrower on account of the more incrassate walls. Auricles triangular, of large dilated cells, which are elongate, incurved, few in number, sometimes arranged in a single row, with usually somewhat incrassate walls. This variety connects the Group *exannulatum* with Group *Rotæ.*

8. Harland Edge, Beeley (57), W. R. Linton!

9. Fishpool and Blackstone Edge (58), Holt! Calder Valley, above Oakenclough (60), A. Wilson!! Harris End Fell (60), A. Wilson.

10. Whernside (64), Wheldon!

11. Weardale (66), Ingham!

12. Above Staveley Hill Head (69), Waddell! Barrow Mountain (69), Mrs. Monsarrat. Mardale (69), A. Wilson!

Sub-Group ***Rotæ*** Ren.

(*Hypnum exannulatum* γ *Rotæ* Schimp. *Amblystegium Rotæ* DeNot. *Hypnum stenophyllum* Wilson. *Hypnum fluitans* var. *Stenophyllum* Schimp.).

Dioicous, almost always sterile, usually purplish, rarely entirely green. Leaves rather distant, narrower and longer than in group *exannulatum,* with piliform attenuated points, toothed. Nerve strong, percurrent or excurrent, sometimes

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rather shorter, but always reaching high in the acumen. Reticulation denser than in var. *pinnatum*, cells much narrower and longer, vermicular. Auricles very distinct, of large oblong-elongated cells, the outermost incurved, often arranged in a single series, their walls frequently incrassate and coloured. (See fig. 4, p. 91.)

Var. ***falcifolium*** Ren. Usually more or less purplish or brownish, mixed with green. Tufts submerged. Stems 5-10 cm. or longer, pinnate. Leaves falcate above, suberect flexuose below, rather lax, lanceolate, narrowed to a long, often spirally-twisted, distantly-dentate acumen. Nerve lost in the acumen or reaching the point, but not distinctly excurrent. Cells very long and narrow. Auricles of the group.

The name *stenophyllum* Wils., having been applied generally to plants of this group, is, in the absence of original specimens, abandoned by Mons. Renauld.

I have received a plant from Mr. Horrell labelled '*Hypnum stenophyllum* Wils., teste W. Wilson, Strensall Common, May 1859. Coll. W. Wilson. Ex herb. Mus. Brit.' This differs in very few respects from the var. *pinnatum* Boul., and is no doubt a state of that. The nerve is by no means long, the auricles are those of the last group rather than this, and the cells too short for the Group *Rotæ* as now understood.

8. Hulland Moss (57), W. R. Linton.

9. Hale Moss (58), W. Wilson. Simmonswood Moss (59), Marrat. Martin Mere, near Southport (59), Wheldon! St. Anne's (60), Wheldon! Between Greenbank and Dolphinholme (60), Wheldon!! Marsham (60), A. Wilson. Catforth (60), H. Beesley!

10. Pilmoor (62), Ingham! Strensall Common, 1859 (62), W. Wilson! Sandburn Common (62), Wheldon! Skipwith Common (61), Ingham and Waddell. Denton Moor, near Ilkley (63), A. Wilson!

Forma ***viridis*** Boul. Green. Stems floating, more elongate and slender, slightly divided, a few short, pinnately-arranged branches in the upper part of the stem. Leaves very long, generally less crowded, the upper circinate, secund, rather dense, the lower flexuose, falcate-spreading, laxer. Cells of the auricles with walls hardly, or only slightly, incrassate.

9. Near the Marshaw Wyre, above Marshaw (60), A. Wilson.

10. Greenfield (63), Wheldon!! 'Bien caracterizè,' Ren.

Forma ***inundata*** Ren. Tufts deep, green above, brown below. Stems immersed, erect, elongated, regularly pinnate.

Branch leaves often small, narrowly linear; flexuose-spreading, giving it a handsome plumose appearance. Stem-leaves falcate.

9. Over Wyresdale (60), Wilson and Wheldon!

11. Wearhead (66), Ingham!! 'Bien caracterizè,' Ren. Strensall Common (62), Ingham!! Coatham Marshes (62), Ingham!! 'Ad forma *inundata* accedens,' Ren.

Section II.—Leaves Truncate at the Base, not Auricled.

H. vernicosum Lindb. Dioicous. In large tufts, pale yellow, passing to red or brown. Stems erect, rigid, pinnate, hooked. Leaves glossy, secund, hamato-reflexed from the middle, or at the point only, oblong or oblong-lanceolate, concave, with a rapidly-contracted short recurved canaliculate acumen, entire, strongly sulcate, neither decurrent nor auricled. Nerve short, flexuose, reaching a little beyond the middle. Cells narrowly vermicular, flexuose, subobtuse, about fifteen times as long as wide, about two or three rows at the base coloured of a red-brown, with incrassate walls, rounded quadrate, one or two rows above these narrowly oblong or sublinear. Perichætial bracts lanceolate, deeply sulcate, lower recurved, upper erect, nerved. Capsule oblong, arcuate, subhorizontal, contracted below the mouth, on a reddish seta twisted to the left. Annulus broad. Peristome teeth finely punctate. The cuticular cells of the stem often adhere to the bases of the leaves when they are detached, and may be mistaken for true auricles.

8. Kinder Scout (57), Holt!

9. Wybunbury Bog (58), W. Wilson! (ex herb. E. C. Horrell).

10. Mickle Fell (65), Wheldon!

12. Head of Kentmere (69), and near Haweswater and Grasmere (69), Binstead.

Var. ***majus*** Lindb. Much more robust (as large as *H. Wilsoni* var. *hamatum*), fuscescent. Stems flexuose, distantly-pinnately branched. Leaves larger, less falcate, often only curved at the point in the lower leaves, terminal strongly hooked, sometimes faintly striate. Nerve wider, less flexuose. Cells longer, the marginal narrower.

5. Longmynd (40), R. de G. Benson!!

9. Bog near Docker (60), Albert Wilson!!

Mons. Renauld states that these latter accord well with specimens from the North of Europe received from Dr. Sanio.

H. revolvens Swartz. Monoicous and dioicous. In large, soft, green, brown, or purple tufts, glossy. Leaves dense,

circinate, secund, sometimes slightly crisped or flexuose, spreading at the points, acumen twisted, oblong or oblong-lanceolate, narrowed more or less rapidly to a linear, sometimes subulate-canaliculate point, not plicate, subentire, truncate at the base. not at all, or very briefly, decurrent. Cells narrow, vermicular, with thick walls, the basal rounded quadrate in one or two rows, with incrassate walls which are sinuous and sometimes porose, the angular not enlarged. This is composed of the following three segregates:—

Forma ***typica*** Ren. (*H. revolvens* Swartz). Monoicous, often fertile. In large, soft, rufous-purple and green, or blackish tufts, with a metallic gloss. Stems irregularly divided, with rather few imperfectly pinnate branches. Leaves large, densely crowded, circinate, from an ovate or oblong-lanceolate base, tapering into a very long fine canaliculate acumen, which is recurved usually until it almost reaches the base forming a circle. Base truncate, not excavate nor decurrent. Nerve narrow, but rather strong. Cells long, narrow, and incrassate, vermicular, the suprabasal ones nearly all prosenchymatous. Not distinct or decurrent at the angles.

8. Carr Meadow (57), Whitehead. Buxton (57), A. Ley. Kinder Scout (57), Holt! Whitehead! Staley Brushes (58), Whitehead! Wybunbury Bog (58), W. Wilson!

9. Southport and Ainsdale (59), Wheldon!! Pendle Hill (59), Wheldon! Ireby Fell, Marshaw Fell, and Harris End Fell (60), A. Wilson! St. Anne's (60), Wheldon! Udale and Roeburndale (60), Wheldon and A. Wilson!! Ireby Fell (60), A. Wilson. Burnley (59), Holt. Haweswater (60), Wheldon! Borwick Swamp (60), A. Wilson.

10. Hambleton Hills, near Hawnby (62), Wheldon! Mickle Fell (65), Wheldon! Beamsley Beacon (63), West! Malham Tarn (64) and near Todmorden (63), Nowell! Ilkley Moor and Beamsley Moor (63), A. Wilson!

12. Riggindale Ridge, Mardale (69), A. Wilson! Loughrigg (69), Gore. Helvellyn (69), Clowes. Patterdale (69) (G. H. Bryan)! Deep Ghyll and Barbondale (69), Stabler.

Var. ***Cossoni*** Ren. (*Hyp. Cossoni* Schimp.). Dioicous or sterile. Robust, taller, frequently richly coloured, reddish brown. Stems more or less regularly pinnate. Leaves larger, more distant, less regularly circinate, the tip of the acumen generally flexuose, spirally twisted and spreading. Nerve a little wider. Cells slightly shorter than in the type, the supra-

basilar consisting of a mixture parenchymatous and prosenchymatous tissue.

Mons. Renauld considers this to be connected with the type and the succeeding variety by intermediate forms; it resembles the former in the length of its cells and leaves, and the latter in its sterility and partly parenchymatous areolation. Mr. Holt, who has paid much attention to this group, considers that it is certainly a form of *H. intermedium* rather than *H. revolvens*.

8. Kinder Scout (57), Holt.

9. Southport (59), Holt (teste Sanio). Birkdale (59), a somewhat intermediate form, Wheldon!! Upper Roeburndale (60), Wheldon and Wilson! Docker (60), A. Wilson!

12. Loughrigg (69), Gore! Canswick Tarn, Kendal (69), Waddell! High Street, Mardale (69), A. Wilson!

Forma ***falcata*** (Sanio) Ren. Glossy, spadiceous to yellowish-green. Stems elongated, slender, rather rigid and wiry, sometimes denuded of leaves below, sparingly branched, branches subpinnate, falcate. Leaves distant, from an erect-falcate base narrowed into a very long, slender, patent, distantly-dentate point, secund, strongly falcate, but not at all circinate, except very occasionally at the tips of some of the branches.

9. Udale (60), Wheldon and A. Wilson.

12. Widdy Bank Fell (66), Ingham!!

I have seen no description, nor have I been able to find any reference to *H. Cossoni* forma *falcata* Sanio. The above description is from a specimen so named by Mons. Renauld, but it appears to be very different from Sanio's *H. intermedium verum falcatum*. *That* is evidently an *intermedium* form, and this is just as certainly more nearly related to var. *Cossoni*. It would appear that there are in reality analagous forms of these two closely-related varieties. Mr. Dixon holds that *H. Cossoni* and *intermedium* intergrade, which is no doubt the case. Mons. Renauld also emphasises this view, but keeps them distinct. The extremes are easily recognisable, and it is convenient for purposes of reference, and to facilitate further study, to have names for forms which keep recurring, although it appears to be almost impossible to satisfactorily describe them. Some of the forms which are most distinct and easily recognisable in the field are extremely difficult to separate on paper.

Var. ***intermedium*** (Lindb.) Ren. (*H. intermedium* Lindb.). Dioicous or sterile, rarely fruiting. Tufts yellowish-green, green above and brownish below, or sometimes more or less fuscous throughout. Stems less robust than in the preceding, simply

divided or irregularly pinnate. Leaves usually smaller, less rigidly circinate, with a shorter acumen, sometimes slightly spreading, often flexuose and twisted, and even decidedly crisped. Cells shorter, less incrassate, the suprabasal ones nearly all parenchymatous, with straight or oblique transverse walls. The basal cells are usually less incrassate and less coloured.

8. Deeping Fen (53), S. Gasking! Kinder Scout (57), Holt!

9. Hale Moss (58), G. E. Hunt (sub nom. *H. Sendtneri*)!! Whiteley Dean and Southport (59), Holt! Ainsdale (59), W. Wilson! Still there, Wheldon!! Leighton Beck (60), A. Wilson! Birkdale, Wheldon!

10. Strensall Common (62), Holt. Northallerton (62), Wheldon! Askern (63), Ingham!

12. Broadgate Bog, Staveley (69), C. H. Waddell!

Forma ***falcata*** Sanio (*H. intermedium verum falcatum* Sanio). Differs from the corresponding form of *H. Cossoni* in its paler yellower tint, less glossy, much shorter and smaller leaves, with the basal areolation of var. *intermedium*. The leaves are falcate throughout, less crowded, not crisped or twisted when dry.

9. Southport (59), G. A. Holt! (teste Sanio).

H. Scorpioides L. Dioicous, robust. Procumbent, yellowish, passing to reddish-brown, purple, or black. Stems rendered tumid by the very concave leaves. Leaves oval, or oval-oblong, large, rugose, and undulated when dry, obtusely acuminate or apiculate, entire, or sometimes with a longer, acute, denticulate acumen. Nerve short and double, or obsolete, very faint. Cells long and narrow, with incrassate and porose walls. Seta long. Annulus of three rows of cells. Deep bogs, either siliceous or calcareous, rather rare. Sanio describes vars. *angustifolium*, *julaceum*, *fuligineum*, and *rubrotinctum*, some of which should be found in Britain.

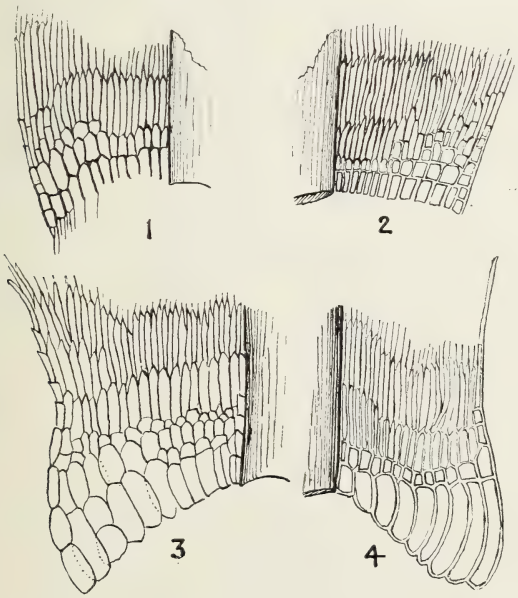
9. Baguley Moor and Wybunbury Bog (58), W. Wilson! Brookhouse Moss (58), J. Cash! Fairbage Moor, near Glossop (58), J. Whitehead. Marshaw Fell, Leighton Beck, near Silverdale, and bog near Docker (60), A. Wilson! Sparingly in a swamp near Southport (59), F. P. Marrat. Hareley Wood, near Todmorden (59), John Nowell.

10. Stockton Forest and Terrington Carr (62), R. Spruce. Battersby Moor (62), W. Mudd. Strensall Common (62), J. G. Baker! Malham Tarn (64), John Nowell.

12. Naddle Forest and Windermere (69), Stabler. Bowness (69), Barnes. Benson Knott (69), Waddell! Grisedale (69), W. B. Waterfall. Loughrigg (69), Gore!

I have to record my grateful thanks to many kind friends for specimens received during the preparation of this paper, all duly acknowledged under the respective species; but I would especially mention my indebtedness to Messrs. G. A. Holt, E. C. Horrell, and A. Wilson, who have supplied both information and specimens which have been of the utmost service; without such help, and that previously mentioned, this very full list would have been an impossibility.

Numerous records and specimens which have passed through my hands are unnoticed in this compilation, owing to uncertainty as to where they should be placed. A few to which less doubt attaches, but which still require further observation before unqualified admission to our list, are enclosed in brackets [ ]. After exercising every care, I cannot hope, however, that no errors have been made. If more observers are induced to give some attention to the abundant material our district provides, errors will be weeded out, fresh facts brought to light, and the object of this article accomplished.



Basal Cells of the Four Groups of *Hypnum fluitans*.

1. Group *Amphibium*.
2. Group *falcatum*.
3. Group *exannulatum*.
4. Group *Rotæ*.

1902 March 3.

Explanation of Plates.

Plate I.

*1. *Hypnum aduncum* (*pseudo-fluitans*) var. *paternum* Sno.
2. *Hypnum aduncum* (*Kneiffii*) var. *intermedium* Schimp.
3. *Hypnum aduncum* (*pseudo-fluitans*) var. *paternum* Sno. f. *gracilis* Ren.
4. *Hypnum aduncum* (*pseudo-fluitans*) var. *flexile* Ren.
5. *Hypnum aduncum* (*typicum*) var. *aquaticum* Sno.
6. *Hypnum aduncum* (*Kneiffii*) var. *attenuatum* Boul.
7. *Hypnum aduncum* (*Kneiffii*) var. *polycarpon* Bland.
8. *Hypnum aduncum* (*typicum*) forma *falcata* Ren.
9. *Hypnum aduncum* (*Kneiffii*) var. *pungens* H.Müll.
10. *Hypnum aduncum* (*typicum*) forma *gracilescens* Ren.

Plate II.

1. *Hypnum uncinatum* Hedw.
2. *Hypnum uncinatum* forma *plumosa* Ren.
3. *Hypnum uncinatum* var. *plumulosum* Schimp.
4. *Hypnum fluitans* (*falcatum*) var. *anglicum* Sno.
†5. *Hypnum fluitans* (*amphibium*) var. *elatum* Ren. et Arn.
6. *Hypnum fluitans* (*falcatum*) var. *falcatum* Schimp.
7. *Hypnum fluitans* (*amphibium*) var. *Jeanbernati* Ren. forma *Holleri* (Sno.) Ren.
†8. *Hypnum fluitans* (*amphibium*) var. *gracile* Boul.
9. *Hypnum fluitans* (*falcatum*) var. *ovale* Ren.

Plate III.

1. *Hypnum revolvens* Sw. var. *intermedium* (Lindb.) Ren.
2. *Hypnum revolvens* var. *Cossoni* (Schimp.) Ren.
3. *Hypnum vernicosum* Lindb.
4. *Hypnum revolvens* Sw.
5. *Hypnum Wilsoni* Schimp. var. *hamatum* Schimp.
6. *Hypnum vernicosum* Ldb. var. *majus* Lindb.
7. *Hypnum Wilsoni* Schimp.
8. *Hypnum scorpioides* Linn.
9. *Hypnum lycopodioides* Schwæg.
10. *Hypnum Sendtneri* Schimp. forma *vulgaris* Sno.
11. *Hypnum Sendtneri* Schimp.

Plate IV.

1. *Hypnum fluitans* (*Rotæ*) var. *falcifolium* Ren. forma *viridis* Boul.
2. *Hypnum fluitans* var. *falcifolium* Ren.
3. *Hypnum fluitans* (*exannulatum*) var. *pinnatum* Boul. f. *polyclada* Ren.
4. *Hypnum fluitans* forma *stenophylloides* Ren.
5. *Hypnum fluitans* var. *pinnatum* Boul.
6. *Hypnum fluitans* var. *brachydictyon* Ren.
7. *Hypnum fluitans* var. *purpurascens* Schimp.

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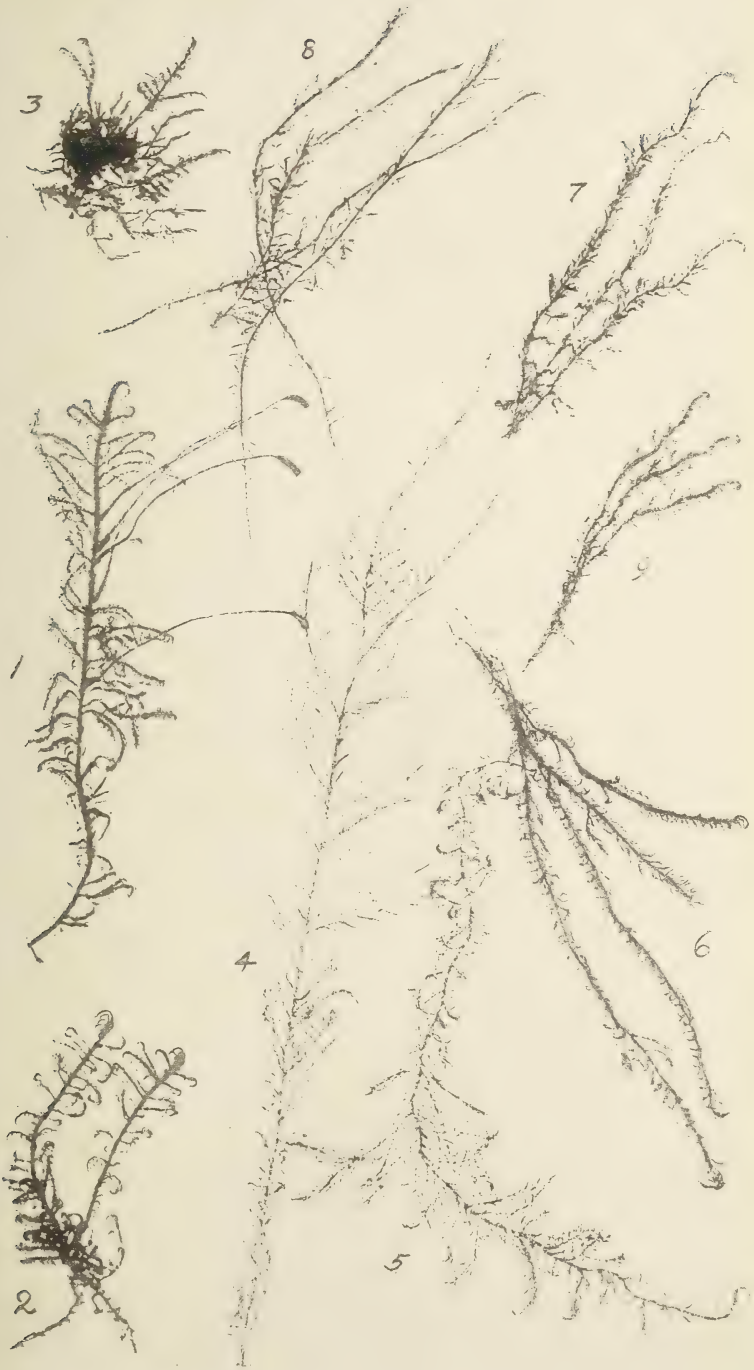
* The specimen figured is a small one on account of the exigency of space.

† These frequently attain a much greater length.

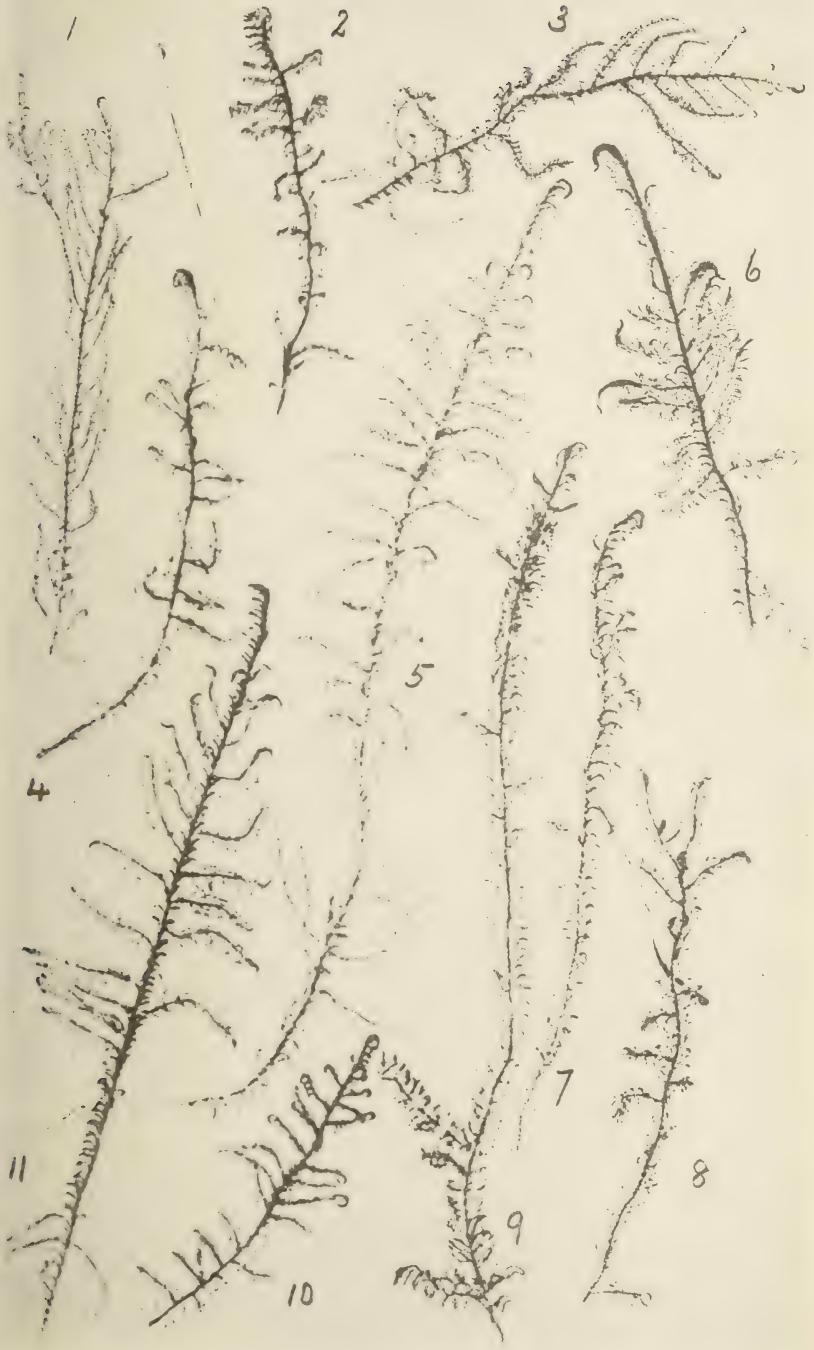
North of England Harpidia, Plate I.

BRITISH MUSEUM
NATURAL HISTORY



North of England Harpidia, Plate 2.

BRITISH MUSEUM
NATURAL HISTORY



North of England Harpidia, Plate 3.

BRITISH MUSEUM
NATURAL HISTORY

North of England Harpidia, Plate 4.

BRITISH MUSEUM
NATURAL HISTORY

HARPIDIOID HYPNA OF YORKSHIRE AND DURHAM.

WILLIAM INGHAM, B.A.,

Organising Inspector of Schools, Haxby Road, York.

The following list contains the water-loving Hypna only, which prove so difficult to identify to students of mosses. I think it well to place this list on record, for I have given special attention to these 'water' mosses, and have succeeded in finding in Yorkshire and Durham all the British species except one, and nearly all the varieties.

This list has a special value, because not only have the mosses been kindly verified by H. N. Dixon, M.A., F.L.S., and J. A. Wheldon, F.L.S., but many of them have been examined and brought up to date by Mons. Renauld himself.

As we should have expected, there is a wonderful range of varieties and forms among these water mosses, especially in the case of *H. aduncum* and *H. fluitans.*

On Coatham Marshes we have the various forms of *H. aduncum* growing within close proximity to each other, and yet varying so much as not to appear to be the same mosses. In two of the Coatham forms the alar cells of the leaves are incrassate, so contrary to the type of *H. aduncum.* Mons. Renauld says these incrassate alar cells are accidental and due to the semi-salt soil on which the mosses grow.

The numbers after the habitats are those of the botanical vice-counties. It is interesting to notice that the new form *diversifolia* Ren. of *H. aduncum* occurs in two widely-separated habitats, Selby and Coatham Marshes.

In the case of *Hypnum aduncum* and *H. fluitans,* the nomenclature adopted in this paper is that by Mons. Renauld in 'Muscologia Gallica,' and by Renauld and Dixon in the 'Journal of Botany' for August 1901. The order of Dixon's 'Handbook of British Mosses' has been followed with all the remaining species.

Hypnum aduncum Hedw.

I.—Group ***Typicum.***

1. Forma *typica.* On the floor of magnesian limestone quarry, Knottingley (63), the forma *anomala depauperata* Ren.; Clifton Ings (62), on side of ditch, the forma *depauperata,* 'ad Group *Typicum* accedens.'

2. Forma *falcata* Ren. Askern Spa (63), in field on side of ditch; on floor of magnesian limestone quarry, Knottingley (63); on Coatham Marshes (62), the forma *diversifolia* Ren.

3. Forma *turficola* Ren. An aberrant form of this among grass on the floor of magnesian limestone quarry, Knottingley (63).

4. Forma *gracilescens* Ren. = var. *gracilescens* Schimp. By side of ditch on Clifton Ings, York (62).

5. Forma *diversifolia* Ren. Among grass by pool, Selby (61); on Coatham Marshes (62), the forma *anomala diversifolia.*

6. Forma *tenuis* (var. *tenue* Schimp.). On side of ditch by wood, Barlby (61).

II.—Group ***Kneiffii*** Boulay.

1. Var. *Kneiffii* Schimp. On side of ditch, Naburn (61), the true *Kneiffii*, which appears to be a rare plant.

2. Var. *intermedium* Bry.Eur. Submerged in pool, Strensall (62); in marsh, among bulrushes, Naburn (61), c.fr. Forma *laxifolia* (var. *laxifolium* Sanio), on Coatham Marshes (62); Naburn (61).

III.—Group ***pseudofluitans*** Sanio.

1. Var. *paternum* Sanio. Submerged in pool, Strensall (62).

2. Var. *flexile* Ren. In brickpond, Church Fenton (64), approaching var. *paternum*; Submerged in pool, Strensall, 'ad v. *flexile* accedens.'

The two forms *falcata* and *diversifolia*, the latter characterised by longly-subulate stem-leaves and much shorter branch-leaves, are to be raised by Renauld to the rank of varieties when they have been proved to be widely distributed. Mr. Wheldon has, I believe, found forma *falcata* in Lancashire.

Hypnum fluitans L.

I.—Group ***amphibium*** Sanio.

1. Var. *Jeanbernati* Ren. (var. *paludosum* Sanio). Floating in large masses, in fruit, Skipwith Common (61); in pool on moor above Farngill, Reeth (65).

2. Var. *elatum* Ren. & Arnell. Covering bed of lake, Skipwith Common (61), the forma *elata*, 'ad var. *elatum* transiens.'

3. Var. *gracile* Boul. On Skipwith Common (61), a delicate and vivid-green moss.

4. Var. *atlanticum* Ren. By Burnhope Burn, Wearhead (66). Forma *gracilis* Ren., on wet stones by the river in Arncliffe Wood (62); a delicate, dark green moss, upon which Renauld founded the new var. *atlanticum.*

5. Var. *Payoti* Ren. Near this var. on Skipwith Common (61).

II.—Group ***falcatum*** Schimp.

1. Var. *falcatum* Schimp. On Skipwith Common (61); on the top of Burnhope Seat, Durham (66), in fine erect tufts, with abundant fruit; and by Burnhope Burn, c.fr.

2. Var. *ovale* Ren. A new var., by Burnhope Burn (66); and nearer this than var. *falcatum,* Falcon Clints (66).

3. Var. *Arnellii* Sanio. On Skipwith Common (61).

III.—Group ***exannulatum.***

1. Var. *pinnatum* Boulay. On Terrington Carr (62); on Skipwith Common (61), approaching forma *gracilescens*; on Pilmoor (62). Forma *stenophylloides* Ren. MS., on the Weardale side of road overlooking Langdon Beck (66), a very fine and robust plant.

2. Var. *brachydictyon* Ren. On Pilmoor (62); on Skipwith Common (61), a singular and very pretty form.

3. Var. *purpurascens* Schimp. On Langdon Beck, side of Weardale Road (66).

IV.—Sub-Group ***Rotæ.***

Var. *falcifolium* Ren. (var. *stenophyllum* Wilson). On Skipwith Common (61), on bed of partly dried-up pool; on Sandburn Common (62), near York, forming the bed of the small pools there; on Pilmoor (62), forming the bed of large pools; on Strensall Common (62), floating in large pool, a very robust growth.

'Ad forma *inundata* Ren. accedens.' Floating in large, dense masses in deep, dark pool, near Ireshope Burn, Wearhead (66).

'Forma *inundata,* bien caracterisé.' On top of Weardale Road, overlooking Langdon Beck (66), a large, golden-yellow moss.

Hypnum Sendtneri Schimp. A tall, fine growth and truly typical, which seems very rare for this moss. Near Naburn (61).

1902 March 3.

Hypnum Wilsoni Schimp. Very fine on Skipwith Common (61); Askern Spa (63).

Var. *hamatum* Lindb. In a bog in front of the White Force, Teesdale (65).

Hypnum lycopodioides Schwgr. Very finely developed, and covering a large extent of ground on Skipwith Common (61); Strensall (62); and Widdy Bank Fell (66). In these three habitats the true moss is found, and is not apocryphal (see Lees' 'Flora of West Yorkshire').

Hypnum uncinatum Hedw. Very abundant in fruit in Teesdale on both sides of the river (65 and 66); Hackness (62); Burnhope Burn, Ireshope Burn, and Kilhope Burn, Wearhead (66); Castle Howard (62).

Var. *plumosum* Schimp. On tree, Saltburn (62).

Var. *plumulosum* Schimp. In fruit, High Force, Teesdale (66); Holwick Scar (65).

Hypnum revolvens Sw. Skipwith Common (61); White Force (65); Tilmire (61).

Var. *Cossoni* Ren. Driffield (61), fine growth.

Var. *Cossoni* Ren. forma *falcata* Sanio. In pool on top of Widdy Bank (66).

Hypnum intermedium Lindb. Fruiting in field at Askern Spa (63); near Selby (61), slightly striate, and approaching *H. vernicosum* Lindb.; Skipwith Common (61); Strensall Common (62).

Hypnum commutatum Hedw. Teesdale (65 and 66); Castle Howard (62); Kirkham Abbey (62); Knaresborough (64); Filey (61); Helmsley (62); High Force (66); Burnhope Burn, c.fr. (66); Cowshill, c.fr., a very slender form (66); White Force (65); Bolton Woods (64); Thomassen Force, Goathland, c.fr., a very slender form (62); Arkengarthdale (65).

Hypnum falcatum Brid. Widdy Bank, c.fr. (66); Holwick Scar, c.fr. (65); High Force (66); White Force (65); Skipwith Common (61); Naburn (61); Burnhope Burn, c.fr. (66); Driffield (61); Mallyan Spout, Goathland (62).

Var. *gracilescens* Schimp. A beautiful slender soft form, near High Force (66).

Var. *virescens* Schimp. Beck Dale, Helmsley (62).

LIST OF YORKSHIRE AND LINCOLNSHIRE BIRDS.

INTENDED FOR USE IN MARKING LOCAL LISTS, ETC.

Occurring at.....

(Limits of area to be stated.)

Name of Observer.....

Date.....

(Period of time over which the observations extend.)

Contractions used in Marking the List:

R = Resident. B = Known to breed within the area.
S.V. = Summer Visitant. W.V. = Winter Visitant.
P.V. = Periodical Visitant.

Points to be noted in Marking the List:

Faunistic Status is important. State whether Resident, Summer Visitant, Winter Visitant, Periodical (Spring and Autumn) Visitant, or Casual and Accidental Visitant.

Relative abundance or scarcity in the area.

Dates when observed in the area.

Migration within, or to or from the area.

Nidification in the area.

Vernacular Names and **Superstitions** noted in the area, and whether by natives or by persons from other parts of the country.

Arrangement and Nomenclature:

The **Systematic Arrangement** of this list is—by kind permission of Dr. R. Bowdler Sharpe—that adopted by him at the British Museum (Natural History) and published by him in his 'Sketch-Book of British Birds' (1898). Conformity with a standard is important, and as regards genera, it should not be overlooked that the avifauna of a district is but a portion of that of the world. The compiler is indebted to Dr. Sharpe not only for his permission but also for looking over the proof-sheets.

The **Nomenclature** is as far as practicable in accordance with the strict law of priority, and without any alteration of the names given by original describers, beyond the correction of obvious typographical misprints.

W. Denison Roebuck,
259, Hyde Park Road,
Leeds.

1902 March 1st.

Rook. ***Trypanocorax frugilegus*** (L.).

Raven. ***Corvus corax*** L.

Carrion Crow. ***Corone corone*** (L.).

Hooded Crow. ***Corone cornix*** (L.).

Jackdaw. ***Colœus monedula*** (L.).

Siberian Nutcracker. ***Nucifraga macrorhyncha*** Brehm.

Jay. ***Garrulus glandarius*** (L.).

Magpie. ***Pica pica*** (L.).

Chough. ***Graculus graculus*** (L.).

Common Starling. ***Sturnus vulgaris*** L.

Rose-coloured Starling. ***Pastor roseus*** (L.).

Golden Oriole. ***Oriolus galbula*** L.

Red-winged Hang-nest. ***Agelæus phœniceus*** (L.).

Greenfinch. ***Ligurinus chloris*** (L.).

Hawfinch. ***Coccothraustes coccothraustes*** (L.).

Chaffinch. ***Fringilla cœlebs*** L.

Brambling. ***Fringilla montifringilla*** L.

Siskin. ***Chrysomitris spinus*** L.

Goldfinch. ***Carduelis carduelis*** (L.).

Twite. ***Cannabina flavirostris*** (L.).

Brown Linnet. ***Cannabina cannabina*** (L.).

Lesser Redpoll. ***Cannabina rufescens*** (Vieill.).

Mealy Redpoll. ***Cannabina linaria*** (L.).

Coues' Redpoll. ***Cannabina exilipes*** (Coues).

House Sparrow. ***Passer domesticus*** (L.).

Tree Sparrow. ***Passer montanus*** (L.).

Crossbill. ***Loxia curvirostra*** L.

Parrot Crossbill. ***Loxia pytiopsittacus*** Bechst.

American Two-barred Crossbill. ***Loxia leucoptera*** Gm.

Bullfinch. ***Pyrrhula europæa*** Vieill.

Greater Bullfinch. ***Pyrrhula pyrrhula*** (L.).

Pine Finch. ***Pinicola enucleator*** (L.).

Reed Bunting. ***Emberiza schœniclus*** L.

Little Bunting. ***Emberiza pusilla*** Pall.

Rustic Bunting. ***Emberiza rustica*** Pall.

Yellow Bunting. ***Emberiza citrinella*** L.

Cirl Bunting. ***Emberiza cirlus*** L.

Ortolan Bunting. ***Emberiza hortulana*** L.

Siberian Meadow Bunting. ***Emberiza cioides*** Brandt.

Corn Bunting. ***Miliaria miliaria*** (L.).

Snow Bunting. ***Plectrophenax nivalis*** (L.).

Lapland Bunting. ***Calcarius lapponicus*** (L.).

Shore Lark. ***Otocorys alpestris*** (L.).

Sky Lark. ***Alauda arvensis*** L.

Wood Lark. ***Lullula arborea*** (L.).

Pied Wagtail. ***Motacilla lugubris*** Temm.

White Wagtail. ***Motacilla alba*** L.

Grey Wagtail. ***Motacilla melanope*** Pall.

Yellow Wagtail. ***Motacilla campestris*** Gray.

Tree Pipit. ***Anthus trivialis*** (L.).

Meadow Pipit. ***Anthus pratensis*** (L.).

Richard's Pipit. ***Anthus richardi*** Vieill.

Tawny Pipit. ***Anthus campestris*** (L.).

Rock Pipit. ***Anthus obscurus*** (Lath.).

Scandinavian Rock Pipit. ***Anthus rupestris*** Nilss.

Tree Creeper. ***Certhia familiaris*** L.

Nuthatch. ***Sitta cæsia*** Wolf.

Great Tit. ***Parus major*** L.

Blue Tit. ***Parus cæruleus*** L.

Coal Tit. ***Parus britannicus*** S.&D.

British Marsh Tit. ***Parus dresseri*** Stejn.

Crested Tit. ***Lophophanes cristatus*** (L.).

British Long-tailed Tit. ***Ægithalus vagans*** (Leach).

Bearded Tit. ***Panurus biarmicus*** (L.).

Common Goldcrest. ***Regulus regulus*** (L.).

Fire-crest. ***Regulus ignicapillus*** (Temm.).

Great Grey Shrike. ***Lanius excubitor*** L.

Pallas's Great Grey Shrike. ***Lanius major*** Pall.

Red-backed Shrike. ***Lanius collurio*** L.

Woodchat. ***Lanius pomeranus*** Sparrm.

Waxwing. ***Ampelis garrulus*** L.

Barred Warbler. ***Sylvia nisoria*** (Bechst.).

Whitethroat. ***Sylvia sylvia*** (L.).

Lesser Whitethroat. ***Sylvia curruca*** (L.).

Orphean Warbler. ***Sylvia orphea*** Temm.

Blackcap. ***Sylvia atricapilla*** (L.).

Garden Warbler. ***Sylvia simplex*** Lath.

Dartford Warbler. ***Melizophilus undatus*** (Bodd.).

Wood Warbler. ***Phylloscopus sibilator*** (Bechst.).

Willow Warbler. ***Phylloscopus trochilus*** (L.).

Chiffchaff. ***Phylloscopus minor*** (Forst.).

Greenish Willow Warbler. ***Phylloscopus viridanus*** Blyth.

Radde's Bush-Warbler. ***Lusciniola schwarzi*** (Radde).

Sedge Warbler. ***Acrocephalus phragmitis*** (Bechst.).

Reed Warbler. ***Acrocephalus streperus*** (Vieill.).

Grasshopper Warbler. ***Locustella nævia*** (Bodd.).

White's Thrush. ***Oreocichla varia*** (Pall.).

Blackbird. ***Merula merula*** (L.).

Ring Ouzel. ***Merula torquata*** (L.).

Redwing. ***Turdus iliacus*** L.

Song Thrush. ***Turdus musicus*** L.

Mistle Thrush. ***Turdus viscivorus*** L.

Fieldfare. ***Turdus pilaris*** L.

Nightingale. ***Daulias luscinia*** (L.).

Redbreast. ***Erithacus rubecula*** (L.).

Red-spotted Bluethroat. ***Cyanecula suecica*** (L.).

White-spotted Bluethroat. ***Cyanecula leucocyana*** (Brehm).

Rock Thrush. ***Monticola saxatilis*** (L.).

Redstart. ***Ruticilla phœnicurus*** (L.).

Black Redstart. ***Ruticilla tithys*** (Scop.).

Wheatear. ***Saxicola œnanthe*** (L.).

Desert Wheatear. ***Saxicola deserti*** Temm.

Whinchat. ***Pratincola rubetra*** (L.).

Stonechat. ***Pratincola rubicola*** (L.).

Hedge Sparrow. ***Tharrhaleus modularis*** (L.).

Alpine Accentor. ***Accentor collaris*** (Scop.).

Dipper. ***Cinclus aquaticus*** Bechst.

Black-bellied Dipper. ***Cinclus cinclus*** (L.).

Wren. ***Anorthura troglodytes*** (Macg.).

Spotted Flycatcher. ***Muscicapa grisola*** L.

Pied Flycatcher. ***Ficedula atricapilla*** (L.).

House Martin. ***Chelidon urbica*** (L.).

Sand Martin. ***Clivicola riparia*** (L.).

Chimney Swallow. ***Hirundo rustica*** L.

Purple Martin. ***Progne purpurea*** (L.).

Green Woodpecker. ***Gecinus viridis*** (L.).

Great Black Woodpecker. ***Picus martius*** (L.).

Great Spotted Woodpecker. ***Dendrocopus major*** (L.).

Hairy Woodpecker. ***Dendrocopus villosus*** (Forst.).

Lesser Spotted Woodpecker. ***Dendrocopus minor*** (L.).

Wryneck. ***Iynx torquilla*** (L.).

Common Cuckoo. ***Cuculus canorus*** L.

White-bellied Swift. ***Cpyselus melba*** (L.).

Common Swift. ***Cypselus apus*** (L.).

Common Nightjar. ***Caprimulgus europæus*** L.

Common Bee-eater. ***Merops apiaster*** L.

Common Hoopoe. ***Upupa epops*** L.

Common Kingfisher. ***Alcedo ispida*** L.

Common Roller. ***Coracias garrulus*** L.

Indian Roller. ***Coracias indicus*** L.

Eagle Owl. ***Bubo bubo*** (L.).

Small Tufted Owl. ***Scops scops*** (L.).

Snowy Owl. ***Nyctea nyctea*** (L.).

Little Owl. ***Athene noctua*** (Scop.).

Long-eared Owl. ***Asio otus*** (L.).

Short-eared Owl. ***Asio accipitrinus*** (Pall.).

Wood Owl. ***Syrnium aluco*** (L.).

Tengmalm's Owl. ***Nyctala tengmalmi*** (J. F. Gmel.).

Barn Owl. ***Strix flammea*** L.

Osprey. ***Pandion haliaëtus*** (L.).

Hen Harrier. ***Circus cyaneus*** (L.).

Montagu's Harrier. ***Circus pygargus*** (L.).

Marsh Harrier. ***Circus æruginosus*** (L.).

Gos Hawk. ***Astur palumbarius*** (L.).

Sparrow Hawk. ***Accipiter nisus*** (L.).

Common Buzzard. ***Buteo buteo*** (L.).

Rough-legged Buzzard-Eagle. ***Archibuteo lagopus*** (Gm.).

Golden Eagle. ***Aquila chrysaëtos*** (L.).

White-tailed Sea-Eagle. ***Haliaëtus albicilla*** (L.).

Swallow-tailed Kite. ***Elanoïdes furcatus*** (L.).

Common Kite. ***Milvus milvus*** (L.).

Honey Kite. ***Pernis apivorus*** (L.).

Peregrine Falcon. ***Falco peregrinus*** Tunst.

Hobby. ***Falco subbuteo*** L.

Merlin. ***Falco æsalon*** Tunst.

Greenland Gyr-Falcon. ***Hierofalco candicans*** Gm.

Iceland Gyr-Falcon. ***Hierofalco islandus*** (Gm.).

Common Kestrel. ***Cerchneis tinnunculus*** (L.).

Lesser Kestrel. ***Cerchneis cenchris*** (Naum.).

Red-footed Kestrel. ***Cerchneis vespertina*** (L.).

Common Cormorant. ***Phalacrocorax carbo*** (L.).

Shag. ***Phalacrocorax graculus*** (L.).

Gannet. ***Dysporus bassanus*** (L.).

Snow Goose. ***Chen hyperboreus*** (Pall.).

Grey Lag Goose. ***Anser anser*** (L.).

White-fronted Goose. ***Anser albifrons*** (Scop.).

Bean Goose. ***Anser fabalis*** Lath.

Pink-footed Goose. ***Anser brachyrhynchus*** Baill.

Bernacle Goose. ***Bernicla leucopsis*** (Bechst.).

Red-breasted Goose. ***Bernicla ruficollis*** (Pall.).

Canada Goose. ***Branta canadensis*** (L.).

Brent Goose. ***Branta bernicla*** (L.).

Whooper Swan. ***Cygnus musicus*** Bechst.

Bewick's Swan. ***Cygnus bewickii*** Yarr.

Mute Swan. ***Cygnus olor*** (Gm.).

Egyptian Goose-Duck. ***Alopochen ægyptiacus*** (L.).

Sheld-Duck. ***Tadorna tadorna*** (L.).

Ruddy Sheld-Duck. ***Casarca casarca*** (L.).

Shoveler. ***Spatula clypeata*** (L.).

Mallard. ***Anas boschas*** (L.).

Gadwall. ***Chaulelasmus streperus*** (L.).

Wigeon. ***Mareca penelope*** (L.).

Common Teal. ***Nettion crecca*** (L.).

Pin-tail. ***Dafila acuta*** (L.).

Garganey. ***Querquedula querquedula*** (L.).

Pochard. ***Nyroca ferina*** (L.).

White-eyed Pochard. ***Nyroca nyroca*** (Naum.).

Tufted Scaup-Duck. ***Fuligula fuligula*** (L.).

Scaup Duck. ***Fuligula marila*** (L.).

Golden-eyed Duck. ***Clangula clangula*** (L.).

Buffel-headed Duck. ***Charitonetta albeola*** (L.).

Long-tailed Duck. ***Harelda glacialis*** (L.).

Harlequin Duck. ***Cosmonetta histrionica*** (L.).

Steller's Eider Duck. ***Heniconetta stelleri*** (Pall.).

Common Eider Duck. ***Somateria mollissima*** (L.).

King Eider Duck. ***Somateria spectabilis*** (L.).

Common Scoter. ***Œdemia nigra*** (L.).

Velvet Scoter. ***Œdemia fusca*** (L.).

Smew. ***Mergus albellus*** L.

Hooded Merganser. ***Lophodytes cucullatus*** (L.).

Goosander. ***Merganser merganser*** (L.).

Red-breasted Merganser. ***Merganser serrator*** (L.).

Purple Heron. ***Ardea purpurea*** L.

Common Heron. ***Ardea cinerea*** L.

Great White Heron. ***Herodias alba*** (L.).

Little Egret. ***Garzetta garzetta*** (L.).

Common Night-Heron. ***Nycticorax nycticorax*** (L.).

Squacco Heron. ***Ardeola ralloides*** (Scop.).

Little Bittern. ***Ardetta minuta*** (L.).

Common Bittern. ***Botaurus stellaris*** (L.).

American Bittern. ***Botaurus lentiginosus*** (Mont.).

White Stork. ***Ciconia ciconia*** (L.).

Black Stork. ***Ciconia nigra*** (L.).

Glossy Ibis. ***Plegadis falcinellus*** (L.).

Spoonbill. ***Platalea leucerodia*** L.

Common Crane. ***Grus grus*** (L.).

Great Bustard. ***Otis tarda*** L.

Little Bustard. ***Tetrax tetrax*** (L.).

Macqueen's Bustard. ***Houbara macqueeni*** (J.E.Gray).

Stone-Curlew. ***Œdicnemus œdicnemus*** (L.).

Cream-coloured Courser. ***Cursorius gallicus*** (Gm.).

Pratincole. ***Glareola pratincola*** (L.).

Grey Plover. ***Squatarola helvetica*** (L.).

Golden Plover. ***Charadrius pluvialis*** L.

Dottrell. ***Eudromias morinellus*** (L.).

Ringed Sand-Plover. ***Ægialitis hiaticula*** (L.).

Little Ringed Sand-Plover. ***Ægialitis dubia*** (Scop.).

Kentish Sand-Plover. ***Ægialitis alexandrina*** (L.).

Lapwing. ***Vanellus vanellus*** (L.).

Turnstone. ***Strepsilas interpres*** (L.).

Oyster-catcher. ***Hæmatopus ostralegus*** L.

Avocet. ***Recurvirostra avocetta*** L.

Black-winged Stilt. ***Himantopus himantopus*** (L.).

Common Curlew. ***Numenius arquatus*** (L.).

Whimbrel. ***Numenius phæopus*** (L.).

Bar-tailed Godwit. ***Limosa lapponica*** (L.).

Black-tailed Godwit. ***Limosa limosa*** (L.).

Spotted Redshank. ***Totanus fuscus*** (L.).

Common Redshank. ***Totanus calidris*** (L.).

Yellowshank. ***Totanus flavipes*** (Gm.).

Green Sandpiper. ***Helodromas ochropus*** (L.).

Common Sandpiper. ***Tringoides hypoleucos*** (L.).

Spotted Sandpiper. ***Tringoides macularius*** (L.).

Greenshank. ***Glottis nebularius*** (Gunn.).

Wood Sandpiper. ***Rhyacophilus glareola*** (Gm.).

Ruff. ***Pavoncella pugnax*** (L.).

Sanderling. ***Calidris arenaria*** (L.).

Little Stint. ***Limonites minuta*** (Leisl.).

Temminck's Stint. ***Limonites temminckii*** (Leisl.).

Pectoral Sandpiper. ***Heteropygia maculata*** (Vieill.).

Purple Sandpiper. ***Arquatella maritima*** (Gm.).

Curlew Sandpiper. ***Ancylochilus subarquatus*** (A.J.Güld.).

Knot. ***Tringa canutus*** L.

Dunlin. ***Pelidna alpina*** (L.).

Broad-billed Sandpiper. ***Limicola platyrhyncha*** (Temm.).

Great Snipe. ***Gallinago major*** (Gm.).

Common Snipe. ***Gallinago gallinago*** (L.).

Jack Snipe. ***Limnocryptes gallinula*** (L.).

Woodcock. ***Scolopax rusticola*** L.

Grey Phalarope. ***Crymophilus fulicarius*** (L.).

Red-necked Phalarope. ***Phalaropus hyperboreus*** (L.).

Black Tern. ***Hydrochelidon nigra*** (L.).

White-winged Black Tern. ***Hydrochelidon leucoptera*** (Schinz).

Gull-billed Tern. ***Gelochelidon anglica*** (Mont.).

Caspian Tern. ***Hydroprogne caspia*** (Pall.).

Common Tern. ***Sterna fluviatilis*** Naum.

Arctic Tern. ***Sterna macrura*** Naum.

Roseate Tern. ***Sterna dougallii*** Mont.

Sandwich Tern. ***Sterna cantiaca*** Gmel.

Sooty Tern. ***Sterna fuliginosa*** Gmel.

Little Tern. ***Sterna minuta*** L.

Sabine's Gull. ***Xema sabini*** (J.Sabine).

Wedge-tailed Gull. ***Rhodostethia rosea*** (Macgill.).

Little Gull. ***Larus minutus*** Pallas.

Black-headed Gull. ***Larus ridibundus*** L.

Great Black-backed Gull. ***Larus marinus*** L.

Lesser Black-backed Gull. ***Larus fuscus*** L.

Herring Gull. ***Larus argentatus*** Gmel.

Common Gull. ***Larus canus*** L.

Glaucous Gull. ***Larus glaucus*** Fabr.

Iceland Gull. ***Larus leucopterus*** Faber.

Ivory Gull. ***Pagophila eburnea*** (Phipps).

Kittiwake. ***Rissa tridactyla*** (L.).

Great Skua. ***Megalestris catarrhactes*** (L.).

Pomatorhine Skua. ***Stercorarius pomarinus*** (Temm.).

Richardson's Skua. ***Stercorarius crepidatus*** (Gm.).

Buffon's Skua. ***Stercorarius parasiticus*** (L.).

Razorbill. ***Alca torda*** L.

Common Guillemot. ***Uria troile*** (L.).

Bridled Guillemot. ***Uria lachrymans*** Val.

Brünnich's Guillemot. ***Uria bruennichi*** Sabine.

Black Guillemot. ***Cepphus grylle*** (L.).

Little Auk. ***Alle alle*** (L.).

Puffin. ***Fratercula arctica*** (L.).

Storm Petrel. ***Procellaria pelagica*** L.

Fork-tailed Storm Petrel. ***Oceanodroma leucorrhoa*** (Vieill.).

Wilson's Petrel. ***Oceanites oceanica*** (Kuhl).

Fulmar. ***Fulmarus glacialis*** (L.).

Great Shearwater. ***Puffinus gravis*** (O'Reilly).

Manx Shearwater. ***Puffinus puffinus*** (L.).

Levantine Shearwater. ***Puffinus yelkouanus*** Acerbi.

Sooty Shearwater. ***Puffinus griseus*** (Gm.).

Bulwer's Petrel. ***Bulweria bulwerii*** (Macgill.).

Great Northern Diver. ***Colymbus glacialis*** L.

Black-throated Diver. ***Colymbus arcticus*** L.

Red-throated Diver. ***Colymbus septentrionalis*** L.

Great Crested Grebe. ***Lophæthyia cristata*** (L.).

Red-necked Grebe. ***Lophæthyia grisegena*** (Bodd.).

Sclavonian Grebe. ***Dytes auritus*** (L.).

Eared Grebe. ***Proctopus nigricollis*** (C. L. Brehm).

Little Grebe. ***Podiceps fluviatilis*** (Tunst.).

Water Rail. ***Rallus aquaticus*** L.

Land Rail. ***Crex crex*** (L.).

Little Crake. ***Zapornia parva*** (Scop.).

Spotted Crake. ***Porzana porzana*** (L.).

Baillon's Crake. ***Porzana pusilla*** Pall.

Moor Hen. ***Gallinula chloropus*** (L.).

Common Coot. ***Fulica atra*** L.

Wood Pigeon. ***Columba palumbus*** L.

Stock Dove. ***Columba œnas*** L.

Rock Dove. ***Columba livia*** Bonnat.

American Passenger Pigeon. ***Ectopistes migratorius*** (L.).

Turtle Dove. ***Turtur turtur*** (L.).

Oriental Turtle Dove. ***Turtur orientalis*** (Lath.).

Pallas' Sand Grouse. ***Syrrhaptes paradoxus*** (Pall.).

Red Grouse. ***Lagopus scoticus*** (Lath.).

Black Grouse. ***Lyrurus tetrix*** (L.).

Red-legged Partridge. ***Caccabis rufa*** (L.).

Common Partridge. ***Perdix perdix*** L.

Common Quail. ***Coturnix coturnix*** (L.).

Common Pheasant. ***Phasianus colchicus*** L.

Andalusian Hemipode. ***Turnix sylvatica*** (Desfont.).

This list is published for the purpose of obtaining Local Notes, more particularly for use at the present time in connection with the preparation of the work on the 'Birds of Yorkshire' which Mr. T. H. Nelson is writing for the Yorkshire Naturalists' Union; also to supply the want of a List of Birds which conforms as regards nomenclature to the Law of Priority, and as regards classification and arrangement to the system now in use at the British Museum; and it is published in 'The Naturalist' with the view of having it permanently available for reference.

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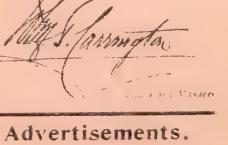

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Chemistry of Some Common Plants.—P. Q. Keegan, LL.D.
Marine Mollusca of Sandsend, Yorkshire.—Miss M. V. Lebour.
Lincolnshire Naturalists at Torksey.—Rev. E. A. Woodruffe-Peacock, L.Th., etc.
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Birds of N.W. Lindsey.—Max Peacock.
Moss-Flora of Pool, Mid-West Yorkshire.—G. B. Savery.
The Pollard Willow, Bottesford.—Max Peacock.
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[C. Naud, Editeur.
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Revue Bryologique, 29e Année, 1902, No. 2, 15e Mars. [M. T. Husnot, Cahan.
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Royal Dublin Society.—Scient. Trans., Vol. 7, Part 11, Sept. 1901. [The Society.
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Birds of the Isle of Man.—Being engaged in the collection of material for a work on Manx Birds, I would gratefully receive and acknowledge information bearing on the subject, or references to books, periodicals, etc., in which such occur, and which may not have come under my notice.—P. RALFE, The Parade, Castletown, Isle of Man.

A MAY-DAY ON MAW-RIGG (NEAR LANGDALE END).

Rev. W. C. HEY, M.A.,
West Ayton, near Scarborough, Yorkshire.

It is the 20th of May. The wind blows soft but cool from the south-east. The sun beams from a cloudless pale blue sky. The approach to the moor is brilliant with the golden foliage of Sycamores and the graceful white festoons of the Bird-Cherry. Once on to the moor, and the only vegetation that rises conspicuously above the still dead heather consists of small isolated Birch trees and scattered Whin bushes in the height of their golden glory. The ground has become dry from the long continuance of sunny east winds, but the patches of Sphagnum are still moist, and rosetted over with the dew-spangled Droseras (*D. rotundifolia*). As we tramp on an aromatic scent rises from our footsteps, and, looking down, we notice the fragrant catkins of the Sweet Gale, but the leaf is still dormant. A little higher and we pass through dwarf thickets of Bilberry, bearing its pale crimson, urn-shaped flowers. Here and there are seen the bright box-like leaves of the red Whortleberry (*Vaccinium vitis-idæa*), but the delicate clustered flowers are still a week from opening. In grassy spots are spread pink carpets of Lousewort, contrasted with a few blue spikes of Milkwort. By the bank of the moorland stream the soft golden flowers of the Colt's-foot are still gay. Down in the valley it has long since passed from flower to downy pappus, and gone to make feather-beds for the young birds.

Insects are numerous and conspicuous. I once remarked that *Thecla rubi* was just like an animated Birch leaf. To-day I observed that the butterflies seemed to be aware of the fact themselves, for again and again I noticed them render themselves invisible by alighting among the foliage of the little Birch trees that stud the moor. Emperor Moths came flying past; all of these appeared to be males, but I found a female on the heather in the company of a male. It was not a great day for beetles, as all the little bogs and rills were dry, but I took one insect I had not taken before—*Staphylinus cæsareus*, a large rove beetle, with blood-red thorax, fringed about with pale gold silk. Mr. R. Lawson had, however, recorded it for the Scarborough district many years ago.

1902 April 1.

People do not generally associate Cuckoos with the moors, yet all day was the bird's sweet call in our ears; and very strangely it contrasted with the Curlew's wild notes—music more suited to the great brown wastes of heather. My companion, wandering away from me, told me he had found by the beck a Blackbird's nest with three young ones, but it was 'a funny blackbird with a white patch on its breast.' So I gathered that the bird was a Dipper (often called 'Water-Ouzel').

The sun's power was now failing, and the easterly wind was freshening. It is far from warm on the high moors in May when the afternoon is closing in, and we were not sorry to crown our ramble with a cup of good hot tea at the sign of the 'Moor Bird.'

NOTES on MAMMALS.

Albino Rat near Pocklington.—On the 19th October 1901 a farmer living near Pocklington told me that two or three years ago he had seen a white wild Rat (presumably *Mus decumanus*) on his farm.—WILLIAM HEWETT, York, 18th January 1902.

Otters in the Grimsby District.—Otters (*Lutra lutra*) have turned up at Swinhope (Louth, Div. 8 by Rev. E. A. W. Peacock's County Divisions). I wrote to the Rector (Rev. J. McKim, M.A.) regarding the same, and he replies: 'The Otters you wrote about are not being molested, at present at anyrate, though the probability of Trout for breakfast will now be very remote. We discovered them quite accidentally, a small terrier, put into a hole at a tree root by the stream, for Rabbits, bolted Otters instead. They were a fine young couple; they swam to the next tree root, where they found safety; we tried to dig to them, but the water was too high in the brook.'—ARTHUR SMITH, 5, Cavendish Street, Grimsby, 7th Feb. 1902.

How do Mammals Drink?—Is there anyone who can say offhand with certainty how all our common mammals drink? I cannot, and I ought to be able. One keen naturalist to whom application was made replied, 'After all the years of rabbit-keeping, and saucers of milk I have given them, it is too stupid to be unable to say with certainty how they drink. But surely it is a matter of sucking like a horse, only done in a more quiet and high-toned manner. Do rabbits, however, drink in a wild state? Has anyone ever seen them doing so? I seem to think I have read in a book that they never do more than 'a sort of nibble' the drops of dew from wet herbage.' Another observer 'who used to keep tame rabbits' says 'they drink with their lips.' I fail to see how any creature can drink in any other way. A third lover of nature and born student says, 'My impression, too, is 'they drink with their lips,' though I cannot speak with any certainty. In very dry seasons, when there is little dew for weeks, rabbits must take water at times surely in a wild state. Sheep are also said not to drink, but they will during droughts. I saw one myself drink out of the hoof marks where bullocks had heavily trampled wet ground.' I can set the question of drinking at rest at least, for through telescopes and field-glasses I have seen sheep, hares, rabbits, rats, voles, and Mustelidæ all take water at becks and drains in dry weather. The true carnivora lap, as we all know, and in describing the action of the horse and the cow we should not get far wrong. What, however, are the right phrases to use for the action of the stoat, rat, or hare? I am not setting any natural history puzzle, but asking for definite information.—E. A. W. PEACOCK, Cadney, Brigg, 18th Jan. 1902.

Naturalist,

NOTE ON SPIDERS.

***Lycosa purbeckensis* in Northumberland.**—In looking over a number of Spiders collected in 1897 near Hexham, one Lycosid was found which did not altogether agree in its specific characters with the name given to it, and was thus presumably of some other but allied species. No descriptions of recent Lycosids being at hand for reference, it was forwarded to Mr. F. P. Smith, of London, who determined it to be *L. purbeckensis* F.O.P.-Cb. It has since been compared with the figure, etc., given in the Ann. and Mag. Nat. Hist., series 6, vol. 15, which may be consulted in the Leeds Reference Library, and there can be no doubt of its identity. It is rare and local, and new to the county, though found in Cumberland on the opposite side of the Pennine chain. The example found was a mature female.—Wm. Falconer, Slaithwaite, Huddersfield, 12th February 1902.

NOTES on LINCOLNSHIRE FLOWERING PLANTS.

Bullfinch Feeding on Sea Buckthorn Seed.—This summer I sent a lot of Sea Buckthorn (*Hippophaë rhamnoides* L.) seed to the north for coast sand sowing. While I was talking about the matter to a friend, who is a good botanist and ornithologist, I learned that only one bird, the Bullfinch (*Pyrrhula europæa* Vieill.), is known to feed on the very plentiful seeds of this shrub. Is this the experience of our shore dune naturalists?—E. Adrian Woodruffe-Peacock, Cadney, Brigg, 18th January 1902.

Some Flowering Plants at Woodhall Spa, Linc. N.—During a visit to Woodhall Spa, Div. 10, last October, I came across several interesting plants, and give in the list below all those that are not mentioned in my list of Woodhall Spa Plants ('Naturalist,' August 1900), or in Mr. Melvill's 'Addenda' ('Naturalist,' November 1900).

I again found the *Agrimonia* about which there was a doubt in my previous paper, so sent a specimen to the Rev. E. A. Woodruffe Peacock, who says it is *odorata*; it is a fine plant, and a new record for Lincs.

I also sent Mr. Peacock some curious specimens of *Juncus bufonius*, and which he says are the variety *viviparus*; this is new too. It was abundant on the edge of a pond near the Bath House, with *Scirpus setaceus*.

Ranunculus Flammula var. *radicans* Nolte was fairly plentiful in a ditch on the road to Old Woodhall. I was surprised to see it there, for I had only a week before found it in S. Lincs.; a new record also.

In a piece of waste ground on the 'Kirkby Lane' I saw *Thlaspi arvense*, *Erysimum cheiranthoides*, *Silene noctiflora*, *Lamium amplexicaule*, long corolla form, and *Melilotus alba* Desr.; in a stubble-field close by, *Erodium cicutarium* var. *chærophyllum* and *Polygonum aviculare* var. *rurivagum* Jord.; on the borders of the lane, *Myrica Gale*, *Rhamnus Frangula*, *Polygonum amphibium* var. *terrestre* Leers. *Lastræa spinulosa* and *Geranium molle*, *flore albo* were plentiful.

I saw *Stellaria media* var. *neglecta* Weihe on the Horncastle road, and one plant of *Scabiosa Succisa*, *flore albo*.

On the moor near the 'Victoria,' *Molinia varia* and a few plants of pink flowered *Prunella vulgaris*; *Linaria Elatine* was abundant in a field by Bracken Wood; and in Reed's Beck, *Potamogeton perfoliatus* and *Myriophyllum spicatum*.

Vinca major was plentiful in a hedge on the Stixwould Road.

Centaurea nigra var. *decipiens* Thuil. I found within a few yards of the new church; the spot will soon be built on.

Onopordon Acanthium was growing as an escape on the road to Kirkstead (Tattershall), just where the pellucid sewer crosses the road; in the next field, in a marshy spot near the ponds, were a few plants of *Triglochin palustre*.

These are all in Woodhall Spa parish.

On Kirkby Moor I saw *Polypodium vulgare*; in a pond near Kirkby-on-Bain village, *Chara hispida* was abundant.—S. C. Stow, Court Leys, Brandon, Grantham, 19th November 1901.

NOTE on YORKSHIRE MAMMALS.

Albinism in Rats near Selby, Yorkshire.—On the 11th April 1901 Mr. W. Horsfield, of Scalm Park, Bishop's Wood, Yorkshire, told me that during the winter of 1898 and 1899 he had killed with the aid of ferrets and dogs 140 Rats (*Mus decumanus*) from one stack at Scalm Park, and that one of the rats was of a sandy colour with pink eyes.—WILLIAM HEWETT, York, 18th January 1902.

NOTES on FLOWERING PLANTS.

Primroses in Bloom in January in South Lincolnshire.—Primroses (*Primula acaulis*) were to be seen in bloom in Sapperton Wood, Div. 15, in January; on the 23rd of that month my father saw many plants in bloom, four and five flowers were fully out on some of the plants.—S. C. STOW, Court Leys, Brandon, Grantham, 10th February 1902.

Plant-Names and Folk-Lore at Newsome, Huddersfield.—Adverting to Mr. J. W. Fawcett's interesting notes on 'Plant-Names in the North of England,' on p. 4 of 'The Naturalist' for January, the following list of local names used by the inhabitants of the village (Newsome) in which I reside may perhaps interest your readers. They are always used by the natives, both upgrown and children, but, most unfortunately, neither one or the other can tell you who taught them these names; the invariable answer being, in the case of children, that either father or mother has taught them, and the upgrown people tell you that they were taught them when young. Of course the answers are always given in the dialect so well known in our neighbourhood. One has, therefore, to be satisfied with the thought that the names have been handed down from one generation to another, and, despite education, are still cherished. The Foxglove (*Digitalis purpurea*) is always called the 'Poppy,' the Common Red Poppy (*Papaver Rhœas*) receiving the name of 'Cornflower.' A more wide differentiation of naming species one could not desire. 'Eggs and Bacon' is the title bestowed on the Yellow Toadflax (*Linaria vulgaris*). The Marsh Marigold (*Caltha palustris*) is known as 'Water-blobs'; Common Chickweed (*Stellaria media*) as 'Chicking-weed'; Black Knapweed (*Centaurea nigra*) as 'Horse-knobs'; Cuckoo Pint (*Arum maculatum*) as 'Wake Robin'; Cleavers (*Galium aparine*) as 'Robin run th' hedge'; Great White Ox-eye (*Chrysanthemum leucanthemum*) as 'Dog Daisy'; Yellow Archangel (*Galeobdolon luteum*) as 'Yellow Weasel Snout'; Wood Anemone (*Anemone nemorosa*) as 'Snowdrop.' Local vernacular gives the name of 'Grunsil' to Groundsel (*Senecio vulgaris*); 'Foal-fooit' to Coltsfoot (*Tussilago farfara*); whilst the Greater Plantain (*Plantago major*) is better known as the plant that yields Canary seed. The 'Wiggin Tree' is the common name for the Mountain Ash (*Pyrus aucuparia*), and 'Horse Mint,' strictly speaking, is the Marsh Whorled Mint (*Mentha sativa*). The Furze (*Ulex europæus* and *U. nanus*) is always better known as the 'He Broom,' whilst the Broom (*Sarothamnus scoparius*) proper is termed 'She Broom.' Most people will have it that they are one and the same species, and that the Furze is the male plant, and the Broom the female plant. The Perennial Rye Grass (*Lolium perenne*) is known as the 'Tinker Tailor' Grass. A favourite pastime of the children is to pluck a spike of bloom, and, starting from left to right, touch each spikelet, repeating the following ditty:—

'Tinker, tailor,
Soldier, sailor,
Rich man, poor man,
Beggar man, thief,'

repeating until the end of the spike is reached. The Quake Grass (*Briza media*) receives the name of 'Trembling Grass.'—W. E. L. WATTAM, Newsome, Huddersfield, 24th January 1902.

YORKSHIRE NATURALISTS AT CONISBOROUGH AND DONCASTER.

HERBERT H. CORBETT, M.R.C.S.,
Doncaster.

THE 162nd meeting of the Yorkshire Naturalists' Union was held on Thursday, 26th September 1901, for the investigation of the Don valley from Conisborough to Doncaster. About forty members and associates met at Conisborough Station at 11.30 a.m., and proceeded to the ancient castle. Here those who had their cameras found subjects of antiquarian and geological interest, while the bryologists, coleopterists, and conchologists were busy among the loose, moss-clad stones in the old moat. The castle having been investigated, the party divided into three: one part of the general body of naturalists taking the left bank of the Don, under the leadership of Mr. M. H. Stiles, F.R.M.S.; the other, led by Mr. E. G. Bayford, following the right side; and the geologists, conducted by Messrs. H. H. Corbett and H. Culpin, taking a third course. These latter proceeded to the top of Conisborough Common, where a fine view was obtained of the escarpment of the Lower Magnesian Limestone, with the river Don cutting through it. Turning to the left, along the summit of the escarpment, the South Yorkshire coalfield was seen, with its dense population and smoky air. On going down the steep face of the limestone hill the guides called attention to the fossiliferous bed which is always present near the base of the Permian series in this part of Yorkshire. It varies from a few inches up to 15 feet in thickness, and is crowded with the casts of shells. These are generally very imperfectly preserved, though at some places, e.g., South Elmsall, Hampole, and at the Ashfield Brickworks at Conisborough good specimens are to be found. They consist of species of the genera *Schizodus, Mya, Turbo, Terebratula,* etc.

Passing again over the face of the escarpment towards Conisborough the valley of a small tributary of the Don was noted as following the line of a fault which has thrown up the coal measures against the Permian rocks.

A splendid section of these carboniferous rocks is seen at the Ashfield Brickworks, which were next visited. The section exposes a long series of clays, sandstones, and thin beds of coal. In some of the beds are vegetable fossils which have been referred by Mr. Hemingway to the horizon of the junction of

the Middle and Upper Coal Measures. At the upper part of the section are some much-contorted marls, and above them is again seen the shell-bed of the Lower Magnesian Limestone. This is capped by Boulder Clay containing well-striated boulders of local rocks and also of Mountain Limestone.

From the brickworks a move was made towards the Don valley, some curiously weathered blocks of Magnesian Limestone in a field on the way coming in for notice and record by means of Mr. Bingley's camera. From this point the route followed was the same as that taken by the party under Mr. Bayford's

Lower Magnesian Limestone Escarpment, Conisborough Common:
Taken during the Excursion by Mr. Godfrey Bingley.

leadership. The footpath to Doncaster follows the river pretty closely and passes through some beautiful country diversified by wood and rock. In one place a remarkable ridge of hard crystalline rock runs up the side of the valley, and this ridge is very rich in fossils. These consist of the same species as those found in the limestone at the Ashfield section, with the addition of a *Retepora*. At Warmsworth the limestone has been extensively quarried, and good sections were seen and photographed. Some very good examples of the winding of a river through a rocky country were noted, the stream surging from side to

side of the valley in a series of curves, with steep rocky banks on the convex, and low-lying lush meadows on the concave sides of the bends.

On arriving at Balby the Permian formation was left and the Trias was reached, a quarry on the roadside showing a section of Bunter Sandstone with current-bedded post-glacial gravels above.

The party led by Mr. M. H. Stiles were joined by some of the mycologists, namely, Messrs. T. Birks, W. N. Cheeseman, and Thos. Gibbs, who had been taking part in the fungus foray at Cadeby. As will be seen by the report sent in, several specimens were found that had not rewarded the fungus-men during their week's work until this bit of new country was explored.

On arrival at Doncaster the members assembled for tea at the Glyn Hotel, after which the Sectional and General Meetings were held under the chairmanship of the Rev. W. Fowler, of Liversedge, President of the Union. The various sections handed in their reports of the day's finds, and votes of thanks were given to the local guides and to the landowners and quarry proprietors for permission to visit their estates.

The following is a record of the objects observed in the locality during the excursion, and in the case of the Bryological report a general moss list for the district is added.

Of course the time of the year at which the excursion was held, made the records in some sections very meagre, but still the appended lists from the different recorders will show that the day was far from unprofitable.

Mr. John W. Taylor, F.L.S., President of the Conchological Section, reported that he and Mr. W. Denison Roebuck, F.L.S., had spent their day in the investigation of the ponds at Cusworth in search of a peculiar form of *Limnæa auricularia* which had been sent from that locality some years ago.

In this object they were not successful, for although a few examples of the species were found they were young and of the ordinary form. One or two *Limnæa truncatula* occurred, a few *Planorbis nautileus,* numerous *Pl. albus,* and a few very young *Pl. carinatus,* along with a characteristic example of var. *disciformis. Bythinia tentaculata* was common, and several examples of *Valvata cristata* occurred. The Bivalves found included a few examples each of young *Sphærium corneum, Pisidium pusillum, P. obtusale,* and *P. fontinale.* One or two Caddis-cases found were built mainly of *Planorbis albus, Pisidium pusillum,* and young *Bythinia tentaculata.* A single example of *Succinea elegans* was

found by the pond side. The Slugs found were *Arion minimus*, one adult; *A. circumscriptus*, one very minute; *Agriolimax agrestis*, very common and of the typical form without markings; and *Limax lævis*, very numerous and mostly young, under damp logs. The land shells found included one *Hyalinia cellaria*, a few *H. nitidula*, several *H. crystallina*, several *H. fulva*, and several *Zua lubrica* var. *lubricoides*, while *Helix rotundata* and *H. hispida* were common. The total for Cusworth thus amounted to 23 species, of which 4 were slugs, 8 land and 11 freshwater shells.

In addition to this, Mr. H. H. Corbett collected about Conisborough Castle one *Helix rotundata*, one *Hyalinia crystallina*, two *H. alliaria*, and one *Clausilia bidentata* var. *everetti*, the two last-named raising the total bag for the day to 10 land shells and 25 altogether.

The coleopterists present were Messrs. E. G. Bayford and H. Ostheide, who met with the following species :—

Pterostichus nigrita F.	Bibloporus bicolor Denny.
Anchomenus angusticollis F.	Coccinella 7-punctata L.
Anchomenus albipes F.	Exochomus 4-pustulatus L.
*Hyphydrus ovatus L.	Scaphidium 4-maculatum Ol.
Hydroporus planus L.	Scaphisoma agaricinum L.
Ocypus olens Müll.	Elmis æneus Müll.
Tachyporus hypnorum F.	Geotrupes spiniger Marsh.
*Trechus minutus F. var. obtusus Er.	Rhinosimus ruficollis L.

It may be noted that the 'List of Yorkshire Coleoptera' is published as far as the Staphylinidæ, to which *Tachyporus* belongs. The species marked * are not included in the list as occurring in the S.W. district, although they are fairly common everywhere in it.

Mr. M. H. Stiles, F.R.M.S., reported that, in Micro-Zoology and Botany, with the exception of a gathering from a small spring on the Cadeby Cliff opposite Conisborough, nothing was done until Cusworth was reached. Here, in conjunction with Mr. H. Moore, F.R.M.S., of Rotherham, the ponds were fished with very fair results, although it was late in the day when the party arrived there and wished that more time had been at their disposal. They were especially gratified to find in the pond on the south, leading from the 'Bubbling Spring,' traces of *Volvox globator*, the membranous sacs only being present; this constitutes a new record. In the same pond *Bosmina longirostris* was very plentiful. Mr. Moore furnishes the following list of Rotifers, which he found in these ponds :—

Anuræa aculeata.
Anuræa cochlearis. Common.
Brachionus bakeri.
Brachionus rubens.
Dinocharis pocillum.
Euclanis triquetra.
Pterodina patina. Common.
Rotifer vulgaris.

He did not meet with any tube-builders. Mr. Stiles also noticed *Stentor*.

The Diatomaceous gatherings were worked out in two groups one from Cusworth (1), the other from the little spring at Cadeby (2), a fragment of scum from the middle pond at the latter place being especially rich.

Amphora ovalis. 1.
Amphora ovalis
var. affinis minor. 1.
Cymbella cuspidata. 1.
Cymbella cuspidata
var. naviculiformis. 1.
Cymbella cymbiformis
var. parva. 2.
Stauroneis phænicenteron. 1, 2.
Stauroneis anceps. 1.
Navicula major. 1.
Navicula viridis. 2.
Navicula oblonga. 2.
Navicula viridula. 1.
Navicula radiosa. 1, 2.
Navicula rhynchocephala. 1.
Navicula humilis. 1.
Navicula dicephala. 1, 2.
Navicula lanceolata. 2.
Navicula cuspidata. 1.
Navicula sculpta. 1.
Navicula limosa
var. gibberula. 2.
Colletonema lacustre. 2.
Amphipleura pellucida. 1.
Pleurosigma attenuatum. 1, 2.
Pleurosigma spencerii. 1, 2.
Gomphonema constrictum. 1, 2.
Gomphonema acuminatum. 1, 2.
Gomphonema montanum
var. subclavatum. 2.
Gomphonema intricatum. 2.
Gomphonema angustatum. 2.
Cocconeis placentula. 1.
Epithemia turgida. 1.
Epithemia gibba
var. ventricosa. 1.
Epithemia gibberula
var. producta. 1.
Epithemia zebra. 1.
Eunotia lunaris. 2.
Eunotia lunaris
var. bilunaris. 2.
Synedra vaucheriæ
var. parvula. 2.
Synedra ulna. 2.
Synedra ulna
var. longissima. 1.
Synedra acus. 2.
Fragilaria capucina. 1, 2.
Meridion circulare. 2.
Diatoma elongatum. 1.
Cymatopleura elliptica. 1.
Cymatopleura solea. 1, 2.
Surirella ovalis. 2.
Surirella ovalis var. minuta. 2.
Surirella biseriata. 1.
Campylodiscus hibernicus. 1.
Hantzschia amphioxys. 1.
Nitzschia punctata
var. elongata. 1.
Nitzschia acuminata. 1.
Nitzschia sigmoidea. 2.
Melosira varians. 2.

Mr. William Ingham, B.A., of York, reported on the Mosses as follows:—At the foot of Conisborough Castle grow *Eurhynchium confertum* Milde (in fruit as usual), *Tortula muralis* Hedw., *Brachythecium rutabulum* B.&S., *Eurhynchium prælongum* B.&S., *Amblystegium serpens* B.&S., *A. juratzkæ* Schimp., *Eurhynchium speciosum* Schimp., and *Bryum cæspiticium* L. Of

these mosses the best and rarest is *Eurhynchium speciosum*, a fine glossy-leaved moss, which, until quite lately, has been considered as specially belonging to the South of England. The same moss occurs at Ackworth and Staddlethorpe. *Amblystegium juratzkæ* is also a good moss, and one that I have proved to be well distributed throughout Yorkshire and Durham. *Bryum cæspiticium* also occurs on a wall near Balby, where it is quite hoary, due to its long leaf points, this state being caused by the dry habitat on the magnesian limestone. *Eurhynchium confertum* is found in large patches on the walls at Wadworth village. Near Balby is a shallow quarry where grow *Pottia truncatula* Lindb., *Barbula cylindrica* Schimp. (a golden yellow form), *Brachythecium velutinum* B.&S., *Hypnum chrysophyllum* Brid., *H. stellatum* Schreb., *H. molluscum* Hedw.

Crossing the Don near Conisborough we soon reached a wall carpeted with a delicate form of *Amblystegium serpens* B.&S., which has collected a vast amount of the finest black dust, proving the state of the atmosphere in that part.

On passing through the wood we found two good mosses on blocks of magnesian limestone. These are the delicate and minute *Fissidens pusillus* Wils. (crowded with fruit), and the rare *Plagiothecium depressum* Dixon. In the Rectory grounds at Sprotborough occurs *Eurhynchium murale*, very near var. *julaceum* Schimp.

Between Sprotborough and Doncaster, and close by the Don, is a quarry rich in mosses, as the following, which I have found in spring and on the present occasion, will show:—*Fissidens bryoides* Hedw., *F. taxifolius* Hedw., *Pottia truncatula* Lindb., *Tortula muralis* Hedw., *Barbula rubella* Mitt., *B. convoluta* Hedw., *B. revoluta* Brid., *Encalypta streptocarpa* Hedw., which carpets one part of the floor of the quarry with its vivid green patches, but always barren, as it is an exceedingly rare fruiter; *Brachythecium rutabulum* B.&S. (fruiting freely on the sides of the quarry), *Eurhynchium prælongum* B.&S., *E. Swartzii* Hobk. (a dark green form), *E. striatum* B.&S., *E. confertum* Milde, a very delicate form of *Amblystegium serpens* B.&S., *Hypnum riparium* L., in fruit (proving how wet a magnesian limestone can become, as this is a moss particularly delighting in water, as its specific name implies), *H. chrysophyllum* Brid. (of golden yellow, as its name signifies, on the earthy side of the quarry), *H. cuspidatum* in fruit, and another large, very pinnate, and highly chlorophyllose form, due to the blending of the two fine conditions, i.e., abundance of water and abundance of lime-

stone, and *Hylocomium squarrosum* B.&S. Mr. Dixon calls the barren *H. cuspidatum* above a very fine growth.

On the same side of the Don, near Marr, is a quarry rich in good mosses, as the following will show: —*Ditrichum flexicaule* var. *densum* Braithw., usually a mountain plant, is here well established, and the tufts have the strange habit in the autumn of detaching themselves from the substratum and lying loose on the surface, a habit this has in common with *Weisia tortilis* C.M., which occurs in the Jackdaw Crag Quarry, Tadcaster; *Pottia truncatula* Lindb., *P. lanceolata* C.M., *Tortula ambigua* Angstr., *Weisia viridula* Hedw., *Barbula fallax* Hedw., *B. fallax* var. *brevifolia* Schultz (in fruit, a rare moss and also rare in fruit), *B. convoluta* Hedw. (in abundant fruit), *B. unguiculata* Hedw., *Encalypta streptocarpa* Hedw., *Thuidium recognitum* Lindb. (a rare and beautiful moss on banks in the quarry), *Brachythecium rutabulum* B.&S., *B. glareosum* B.&S., *Eurhynchium praelongum* approaching var. *Stokesii*, *E. Swartzii* Hobk. (a light delicate brown colour), *E. striatum* B.&S., *Amblystegium serpens* B.&S. (a very slender form with delicate filaceous, silky stems), *A. filicinum* DeNot., *Hypnum riparium* L., *H. chrysophyllum* var. *erectum* Bagnall (the fourth habitat for this moss, the others being Dovedale, Derbyshire by Bagnall, Wharfedale by Cocks, Ireshope Burn, Durham by myself), *H. stellatum* Schreb., *H. stellatum* var. *protensum* B.&S., a large form of *H. cupressiforme* L., *H. molluscum* Hedw. (very fine on rocks by roadside from Marr to Doncaster), *H. cuspidatum* L.

Several of the above mosses are new records for Vice-county 63, in which the river Don is situated.

For the Fungi Mr. Thomas Gibbs reported as follows:— Notwithstanding that, in order to carry out the day's programme, the pace had to be much faster than is suitable for thorough mycological survey, the day's work resulted in a substantial addition to the finds of the previous days of the foray.

Conisborough Castle, which the party visited immediately upon their arrival, does not look a promising hunting-ground for the mycologist, but a close search in some damp spots on the site of the ancient moat resulted in the finding of several small Discomycetes upon dead twigs and leaves. One of these, a minute species which occurred in some quantity upon dead oak leaves, has since been pronounced by Mr. G. Massee, F.L.S., to be *Helotium tumidulum* Rehm, a species not previously recorded as British. Others noticed about the same

spot were *Helotium lutescens* Fr. and *H. ferrugineum* Fr. The walk through the woods and fields yielded several species not noticed during the previous days, the most interesting of these being *Lepiota excoriata* Schæff., *Tricholoma melaleucum* Pers. var. *porphyroleucum* Fr., and *Agaricus sagatus* Fr.

At Cusworth an Ash tree was seen bearing several piles of the destructive tree parasite *Fomes igniarius* Fr.; the top of the tree was entirely dead, and doubtless the interior would be permeated by the mycelium of the fungus. At Cusworth also the stump of a felled tree formed a centre for an extensive colony of the pretty, though common, *Psathyrella disseminata* Pers.; besides dense clusters in and around the stump itself, smaller groups were scattered along the lines of the spreading roots of the tree for several yards on every side.

Among the Myxogastres a fine colony of *Physarum leucophæum* Fr. was found in Potridings Wood, and the pretty *Trichia varia* Pers. occurred in profusion. The Hollyhock disease fungus (*Puccinia malvacearum*) was seen on a plant of *Malva sylvestris* in the village of Sprotborough.

NOTE on LINCOLNSHIRE POLYZOA.

Polyzoa at Grimsby.—After the north-east winds a great amount of sea-weed, etc., is washed up on the foreshores of Grimsby and Cleethorpes, and amongst this are of course found great numbers of marine specimens. A few mornings ago I went on to the beach and picked up a small mass of tangled weed, zoophytes, etc., and took it home for examination, and among several other specimens of Invertebrates found the following:

Antennularia antennina.
Antennularia ramosa.
Crisia eburnea.
Flustra foliacea.
Flustra truncata.
Hydractinia echinata (on shell).
Hydrallmania falcata (in plenty).
Membranipora membranacea.
Membranipora pilosa.
Sertularia abietina.
Sertularia argentea.
Sertularia filicula.
Thuiaria articulata.
Thuiaria thuia.

—Arthur Smith, 5, Cavendish Street, Grimsby, 18th December 1901.

BOOK NOTICE.

Synoptic Handbook of all Known Grasses.—**Graminées** | — | Descriptions, Figures et Usages | des | Graminées Spontanées et Cultivées | de | France, Belgique, Iles Britanniques, Suisse | par | **T. Husnot** | — | T. Husnot | à Cahan, Par Athis (Orne) | — | **1896-1899** [Folio, 91 pages and 33 plates, price 25 francs].

This forms a useful synopsis of all the grasses known in the countries specified on its title-page, the account of each giving synonymy, description, and summary of geographical range, and under the genera is given account of the usages of its principal species, and dichotomic tables add to the usefulness of the work. The introductory chapter describes suitable herbarium methods, the bibliography of the subject, and gives an analytical table of the genera.

NOTES on BIRDS.

Peregrine Falcon and Hawfinch in Notts.—A fine female *Falco peregrinus* was unfortunately shot in the parish of North Leverton, on Saturday last, 1st February. The species is said to be not uncommon in the Trent valley; but I do not know of any recent records.

The Hawfinch (*Coccothraustes coccothraustes*) seems to have been decidedly common this winter, as we have two or three in this parish, and I have heard of others in neighbouring parishes, and also in the southern part of the county. One bird frequents my garden, and will come for bread right under the window.—ALFRED THORNLEY, South Leverton Vicarage, Lincoln, 4th February 1902.

Thrushes and Barbed Wire.—Birds quickly adapt themselves to their surroundings. Walking on Kelsey Beck side in this parish (Cadney), on the 14th January 1902, I discovered that where there are no stones in the water-carried sandy soil which lies for some distance on both sides of the beck, Thrushes (*Turdus musicus*) used barbed wire, which had been taken down for fox-hunting and left on the ground, for anvils. In two places on the Howsham side the birds had even discovered that the points of barbs broke the shells more readily than elsewhere. I was lucky enough to find one empty shell of *Helix arbustorum* still hanging on a barb, and found three other good specimens which illustrated this new use of American wire.—E. ADRIAN WOODRUFFE-PEACOCK, Cadney Vicarage, Brigg, 16th Jan. 1902.

Vernacular Names of Birds.—The Editor's notes on this subject are most timely and valuable. Though I know North-West Lincolnshire with a life-long experience, and have collected scores of sheets of notes on local names, unrecorded ones with a very limited circulation, as fresh and new as they are bright and original, are ever coming to hand. To-day, 17th January 1902, for instance, I heard by letter from Winterton:—'I called Mrs. T.'s attention to a handsome Denmark Crow (*Corvus cornix* L.) wheeling over the hedge just opposite. She told me she believed 'that was its proper name,' and added immediately, 'but Scawby-way-on, we used to call 'em Second-Murnin' Craws.'' Now the idea of half or secondary mourning in dress is a thing of yesterday, of ladies' newspapers, in this part of England. Another name for the same species is 'Flannel (or Frannel) Back Crow.' This is much older, and recalls the time when undyed and unbleached home-spun flannel was the grey colour of 'the Hoodie's' back. Kirton-Lindsey is the locality for this name.—E. ADRIAN WOODRUFFE-PEACOCK, Cadney, Brigg, 22nd January 1902.

Cats and Birds.—What is the reason which causes so many apparently good birds fit for carnivora food to be taboo to cats? On the 16th December 1901, a Jack Snipe (*Gallinago gallinula* L.), which had been killed by flying against the telegraph wires by the railway at Kirton-Lindsey, was brought to my father's cat. She would not look at it even. Cats will not eat Starlings or the Turdinæ, which used to lie about for days in a half-dead and perfectly helpless condition at Dunstan House in this town, after injuring themselves by attempting to dash at full speed through the plate-glass windows. Robins most cats will eat, certainly my father's does so, but even they make many cats sick. During the great frost of 1895 there were hundreds of dead Turdinæ lying about the gardens and hedges at Cadney, but they were never touched by cats. At the end of last summer the carr drains were low and stagnant, and, because contaminated with the bacilli of enteritis, Partridges and Turdinæ died by hundreds, but were never touched by cats, even when fluttering on the ground and unable to fly. The starvation in one case and a foul-smelling disease like enteritis may account for the birds being neglected at Cadney, but why healthy young Blackbirds and Thrushes should be passed by here requires some further explanation. Can any brother naturalist help?—E. ADRIAN WOODRUFFE-PEACOCK, Wickentree House, Kirton-Lindsey, 23rd December 1901.

NOTES on LINCOLNSHIRE BIRDS.

Little Auk near Grimsby.—A Little Auk (*Mergulus alle*) was taken at Stallingborough last month, and kindly presented to the Grimsby Society by Mr. C. Wilson, Grimsby.—A. SMITH, 5, Cavendish Street, Grimsby, 9th March, 1901.

Blackbird Eating a Frog.—Owing to the long drought Blackbirds (*Turdus merula*), as well as other birds, have found it difficult to find food. They are eating the sloes before they are ripe, etc., etc. A friend informs me that he saw a Blackbird recently attack a full-grown frog. As he approached, in driving his carriage, the Blackbird took the frog in its bill, and with difficulty carried it over the hedge by the roadside.—J. CONWAY WALTER, Langton Rectory, Horncastle, 6th September 1901.

Towering and Spiring Birds: North Lincolnshire Observations. —On Monday, 7th October 1901, Lord Yarborough had a shooting party at Cadney. At the end of a field a covey of Partridges rose, and with them a Thrush. Several guns were fired at once, and the Thrush was pricked through a large blood vessel in the lungs, towered in the orthodox way, and was picked up quite dead. Towering is always caused by the lungs filling with blood or by an obstruction in the windpipe. On Thursday, 5th December 1901, there was another shooting party. On this occasion a Partridge spired and fell, but rose again as one of the sportsmen was about to pick it up. A bird that has truly towered never rises again. It dies of suffocation at the end of its flight, before it begins to fall. I have known a towered bird to go nearly half a mile with the wind. Spiring on the other hand is caused by injuries to the brain; and if the flight is watched narrowly it will be seen to be a true spire or screw twist. Sometimes the circle taken is very large, sometimes equally narrow, but always a spiral course. In the majority of cases birds that spire are alive when picked up, and very frequently rise again. I spired a Ringdove one night by a very long shot, and it escaped after performing most wonderful acrobatic evolutions for fully three minutes. Mr. John Blackbourn, of Goxhill-on-Humber, when out shooting with my brother, Max, at Bottesford, spired a Lapwing. It went up till it became invisible to both of them, and they saw no more of it. On the same farm in 1891 I was out with Max when by an overhead shot he spired another Lapwing. When this bird was a mere speck it suddenly ceased going up, and drifting down wind was picked up over half a mile away. A pellet had entered from below and injured the lower and hinder part of the brain. The bird was alive, but only semi-conscious, when picked up. The shoot on 7th October 1901 was notable also for a winged Pheasant seeking refuge in an under-drain. A most unusual thing. All birds, as far as I have been able to learn, tower and spire when they receive those particular injuries which cause these evolutions in game birds, and perhaps I may be allowed, even in such a grave scientific journal as 'The Naturalist,' to add the most laughable case of towering I ever heard of. George Spencer, of Bottesford, my father's late groom, lived as a boy at Wainfleet, on the Wash. When he was a strong lad he left home one misty October morning on his way to his work. He had not proceeded far when he heard the heavy discharge of a punt gun, but the mist was so thick nothing could be seen twenty yards off. He stood for a minute or two listening for the swish of wings, but hearing nothing proceeded on his way. The next thing he remembered was finding himself flat on his back with rather dazed senses, and then sitting up and finding a fine young wild Goose within arm's length. He took it home, and heard later that a man from the next village had fired into a 'string' of geese and one had towered. There could be no doubt that this identical bird had dropped on his head. He never knew which he 'had to be most thankful for—a good Goose, or a thick head and strong neck.'—E. ADRIAN WOODRUFFE-PEACOCK, Cadney, Brigg, 10th December 1901.

NOTES on YORKSHIRE BIRDS.

Albino Skylark at Buckton, Yorkshire.—In November 1900 a white Skylark (*Alauda arvensis* L.) was seen in a flock of several hundreds at Buckton.—WILLIAM HEWETT, York, 18th January 1902.

Albino Swallow at Bempton, Yorkshire.—On the 17th August 1901 a white Swallow (*Hirundo rustica* L.) was repeatedly seen about Bempton. —WILLIAM HEWETT, York, 18th January 1902.

Cream-coloured Skylark at Bempton, Yorkshire.—On the 29th July 1901 a young cream-coloured Skylark (*Alauda arvensis* L.) was noticed at Bempton.—WILLIAM HEWETT, York, 18th January 1902.

White Hedge Accentor at Beverley, Yorkshire.—On 8th September 1900, when at Beverley, I called on Mr. Stewart, the taxidermist of that town, who told me he had received the same day a white Hedge Sparrow (*Accentor modularis* L.) obtained at Beverley, but that it was badly in the moult.—WILLIAM HEWETT, York, 18th January 1902.

Merlins and Curlews on Rombalds Moor, Yorkshire.—The Merlin (*Falco æsalon*) had four eggs on Rombalds Moor, Yorkshire, on the 12th May 1901. The hen bird was trapped, and the male shot a few days later.

Several pairs of Curlews (*Numenius arquatus* L.) were breeding on the moor on the same day.—WILLIAM HEWETT, York, 18th January 1902.

Nuthatch at Helmsley, Yorkshire.—On the 24th January 1901 Mr. J. Sumner told me that he had seen a few days previously in Ashdale Wood, Helmsley, two lots of Nuthatches (*Sitta cæsia*), five or six in each party, evidently family groups. He was sure there were two lots, and that it was not one lot seen twice. He was also certain as to identity, as he saw them at close quarters.—WILLIAM HEWETT, York, 18th January 1902.

Red-backed Shrike in Yorkshire. On 22nd May 1898, when 15½ miles distant from York, and near Everingham, Mr. E. G. Potter and myself saw a male Red-backed Shrike (*Lanius collurio* L.) fly along in front of us, first on one side of the hedge and then on the other.

On 26th May 1895, in company with Mr. E. G. Potter, at Spurn, we saw a male Red-backed Shrike get up close to where we were standing and settle on the telegraph wires. It allowed a near approach. The beautiful red back and black line along the eye were conspicuous.—WM. HEWETT, York, 24th February 1902.

Bird Destruction at Bridlington.—I find the following stated in the *Times* newspaper of to-day :—'At Bridlington one person has contracted to supply to London milliners 10,000 Kittiwakes and Lesser Terns.'

Is there no way of stopping this reckless slaughter of our sea birds? Who are the landowners in this neighbourhood? Surely they could be appealed to.—J. CONWAY WALTER, Langton Rectory, Horncastle, 6th February 1902.

[We most emphatically re-echo Mr. Walter's question and protest. But as much of the destruction doubtless takes place from boats, the landowners can scarcely do very much.—ED. Nat.]

Cuckoo and its Foster Parents, York.—A Cuckoo (*Cuculus canorus* L.)'s egg was found in the nest of a Hedge Sparrow (*Accentor modularis* L.) containing four eggs, and was taken to the Retreat, York, and put under a Canary on the 2nd June 1901. The young Cuckoo emerged on the 12th, and on the 15th June it was put into the nest of a Spotted Flycatcher (*Muscicapa grisola* L.), which then contained three young birds. Three days afterwards, i.e., on the 18th, the young Flycatchers were found on the ground, outside the nest, having evidently been ejected by the young Cuckoo, which was carefully tended by its foster parents until nearly full grown.—WM. HEWETT, York, 24th February 1902.

NOTES on LINCOLNSHIRE GEOLOGY.

Fossils in a Claypit near Lea, Lincolnshire.—On the 17th January 1902, my father (Mr. F. M. Burton, F.L.S., F.G.S.) and I arranged to go to Mr. Wells' claypit. We took the 9.30 train to Lea, and then walked to the brick kiln, getting a few mosses on the way. Here the foreman showed us where he had found some of the vertebræ and several small bones of what appears, without doubt, to be an *Ichthyosaurus*. Some specimens of these vertebræ had been brought to my father some time before, and the object of our walk was to see where they had been found and to investigate a certain fault about which Mr. Wells had informed my father. The tail of the *Ichthyosaurus* seemed to be pointing eastward, as the workmen said the vertebræ tapered in that direction. About ten feet of the clay in which the bones were lying had been dug, but the part where the head would naturally lie had not been touched. We found plenty of fossil shells (all bivalves) and some ammonites, among which were some very flat ones, which my father thinks are probably *planorbis*. There were two layers of limestone, the upper five feet from the surface, the lower two feet below that; in two places these were faulted, but the exact cause cannot be seen. We also noticed that the layers on the east side of the pit were lower than those on the west, and the men told us that at a pit called Klondyke, about two hundred yards to the east, they had dug twenty-five feet down and not found them.

We walked back to Gainsborough, and on our way back saw a Blackbird (*Turdus merula*) with one white feather in its tail.—PHILIP A. BURTON, Highfield, Gainsborough, 18th January 1902.

Lincolnshire Boulders.—On looking recently through 'The Naturalist' volume for 1900, I saw, for the first time, on page 362, in the Report of the Yorkshire Boulder Committee, a record by Mr. J. A. Jordan, of boulders found by him on Spital Hill, Gainsborough.

Blocks of stone there certainly are on the hill-side, but they were put there by the local authorities for certain purposes.

The hill, which runs up the Keuper escarpment overlooking Gainsborough on the east, is about 450 yards in length. On the north side of it there is a slightly-raised footpath, and on the south a ditch. The foot-path is held up by paving-strips which are buttressed here and there by blocks of stone; while on the south side other blocks are laid down to keep carts and wagons off the ditch. I have counted the blocks, and on the south side 21 are visible and on the north 33. Some of them, however, might easily be overlooked by anyone passing by owing to their small size.

I need not repeat what I stated in 'The Naturalist' for 1897, p. 371, about stones brought, either as a cargo or ballast, by boats, and the use made of them by town and highway authorities; but I may mention that one particular block I then alluded to, as showing marks of the boring-rod, lay by the side of this road a little way above the top of Spital Hill.

As to the composition of the stones I can say nothing. They range from true rocks to Frodingham slag. Some of them have been there for many years, while others have been added more recently. Whatever they are they have no geological interest, and have no claim to be recorded as 'boulders.'—F. M. BURTON, Highfield, Gainsborough, 6th December 1901.

NOTES and NEWS.

We are in receipt of various reprints. From Hull Mr. T. Sheppard, F.G.S., sends us his memoir of the celebrated Adrian Hardy Haworth, F.L.S., who lived from 1767 to 1833, the second of his most interesting series of 'By-Gone Hull Naturalists.' And Mr. W. Whitwell, F.L.S., favours us with reprints of 'East Sussex Notes' (botany at Horsted Keynes) and his 'Notes of Shells Observed and Collected in East Sussex' (at the same place).

NOTES on FLOWERING PLANTS.

***Callitriche autumnalis* in Lake Lancashire: a Correction.**—Mr. Martindale, of Staveley, Kendal, writes me that the station I gave in the December 'Naturalist,' p. 362, for *Callitriche autumnalis* is not in Lake Lancashire but in Westmorland. I am very sorry to have led you to publish this error, but I certainly took it for Lake Lancashire.—A. Bennett, 143, High Street, Croydon, 5th December 1901.

This makes for geographical precision, but makes no difference to topographical botany, inasmuch as Westmorland and Lake Lancashire are combined to form V.C. 69.—Ed. Nat.

Silver-leaved Holly at Barrow-in-Furness.—Early in 1900 a Holly tree (*Ilex aquifolium*), about six feet high, flowered profusely in my front garden, and during the summer the berries went through four of the prismatic tints in reverse order, viz., green, yellow, orange, and red. On 28th September 1900 the berries were assuming a red colour. About Christmas 1900, as the tree is planted near my front gate, some knaves were attacted by the large quantity of berries and stripped the branches off one side of the tree. In the year 1901 the tree did not flower and made little new wood. The same berries which grew during the summer of 1900 are still (18th January 1902) on the tree, and most of them are as brilliant in colour now as they were at Christmas 1900. About a dozen to a score of berries still remain on many of the small branches. In some cases the berries have withered and the small branches on which they grew have died. Is this a common occurrence? I enclose a small branch for inspection.—Harper Gaythorpe, Claverton, Prospect Road, Barrow-in-Furness, 18th January 1902.

Botanical Finds near Carlisle in 1901.—The following is a list of some of the plants found during the summer of 1901 in the neighbourhood of Carlisle:—

At Monkhill Lough, *Potamogeton gramineus* var. *obtusifolius*, *Zannichellia palustris*, *Alisma ranunculoides*, *Scirpus acicularis*, *Scirpus lacustris*.

Near Warwick, *Botrychium Lunaria*.

At Upperby Brick-Ponds, and at the old canal bed, Kirkandrews-on-Eden, *Ranunculus sceleratus*.

At Silloth, *Trifolium filiforme*, *Pastinaca sativa*, *Rumex pulcher*, *Gypsophila porrigens* (this species was also found near Carlisle in a different locality from that recorded for 1900).

At Dalston, on a piece of waste ground near the railway station, *Verbascum thapsus*, *Antirrhinum majus*, *Valerianella dentata*, *Dipsacus sylvestris*.

Near Rockcliffe, *Rumex aquaticus*.

Right bank of Eden, opposite Beaumont, *Gilia capitata*, *Neslia paniculata*.

Near Grinsdale, *Parietaria officinalis*, *Ranunculus arvensis*, *Phacelia tanacetifolia*, *Echinospermum lappula*, *Lythrum Græfferis Fenore*.

Near Carlisle, *Thalictrum majus*, *Pyrus communis*, *Carduus nutans*, *Centaurea calcitrapa*, *Borago officinalis*, *Lithospermum arvense*, *Polygonum minus*, *Lepidium ruderale*, *Diplotaxis muralis*, *Erysimum cheiranthoides*, *Cochlearia officinalis*, *Camelina sativa*, *Caucalis daucoides*, *Caucalis latifolia*, *Galium tricorne* (found also at Skinburness), *Linum usitatissimum*, *Plantago psyllium*, *Anagallis cærulea* (plentiful), *Claytonia perfoliata*, *Cephalaria syriaca*, *Lathyrus octuus* DC., *Setaria viridis*, *Panicum glaucum*, *Hordeum maritimum*, *Hordeum jubatum*, *Lolium temulentum*, *Bromus unioloides*.

It should be mentioned with reference to the aliens in the above list that some of them were represented only by single specimens.

The most interesting find of the season was the discovery of *Ranunculus reptans* by Mr. T. S. Johnstone (recorded in a previous number of 'The Naturalist') on the left bank of the Eden, quite close to Carlisle. Mr. Johnstone also found *Lepidium virginicum* and *Xanthium spinosum* on the ballast heaps at Silloth.—W. Thomson, Carlisle, November 1901.

NOTE on LINCOLNSHIRE MOSSES and HEPATICS.

Some New Mosses for North or South Lincolnshire.—During the past year there have been some new species and varieties discovered in the county, six for North Lincolnshire, V.C. 54, and eight for South Lincolnshire, V.C. 53, viz. :—

Dicranum spurium Hedw. Woodhall Spa, Div. 10, 1901, S. C. Stow.

Pottia bryoides Mitt. Louth, Div. 8, 1901, J. Larder.

Tortula muralis Hedw. var. *æstiva* Brid. Court Leys, Div. 13, 1901, S. C. Stow.

Tortula mutica Ldb. 1901. Taken at L.N.U. Meeting at Torksey, Div. 6.

Barbula lurida Ldb. Louth, Div. 8, 1900, Rev. W. W. Mason.

Barbula cylindrica Schp. Louth, Div. 8, 1901, Rev. W. W. Mason.

Cylindrothecium concinnum Schp. Cranwell, Div. 14, 1901, S. C. Stow.

Eurhynchium tenellum Milde. Sapperton, Div. 15, 1901, S. C. Stow.

Hypnum cupressiforme L. var. *ericetorum* B.&S. Mere, Div. 13, Rev. W. W. Mason.

Hypnum aduncum (*typicum*) var. *gracilescens* Schp. Sapperton, Div. 15. 1900, S. C. Stow.

H. aduncum (*typicum*) var. *diversifolia* Ren. Spalding, Div. 17, 1901, S. C. Stow.

H. aduncum (*Kneiffii*) var. *intermedium* Schp. Kirkby-on-Bain, Div. 10, 1901, S. C. Stow.

H. aduncum (*Kneiffii*) var. *intermedium* Schp. forma *laxifolia* Sanio. Court Leys, Div. 13, 1900, S. C. Stow.

H. aduncum (*Kneiffii*) var. *intermedium* Schp. forma *penna* Sanio. Surfleet, Div. 16, 1901, S. C. Stow.

These forms of *H. aduncum* have all been very kindly named for me by Mr. J. A. Wheldon.

The last list of Lincolnshire Mosses was printed in 'The Naturalist,' for March 1901.—S. C. STOW, Court Leys, Brandon, Grantham, 8th February 1902.

NOTE on FLOWERING PLANTS.

***Cypripedium calceolus*, etc., in 1782 at Ingleton and Kilnsey.**—When making some researches in the Bodleian Library I came upon MS. in the Gough Collection containing a 'List of a few of the more rare plants which grow wild in or near the West Riding of Yorkshire, with the places where they grow, made in 1782' (no name).

Of the '*Cypripedium*' he says, 'This plant, having for some years been an article of sale at Ingleton, the people there having hunted so much after it that it is almost extirpated in the neighbourhood, I met with only two plants this summer, and these too young to bear flowers. They grew just under the wall at top of the wood among the privet bushes, in the lower part of the Helk, near Ingleton.

I saw about a dozen plants of it in a garden belonging to Mr. Lobby, attorney-at-law, in Bingley, who told me they were brought from Kilnsea Crag, in Craven, a place I have never seen.'

Does not this help to account for the scarcity of the plant at the present day?—it is now almost extinct. It has been generally supposed that the removals of this plant were made chiefly in the nineteenth century, but this extract shows that the mischief was done much earlier.

Of *Geranium phæum* he says, 'In a wood near Clapham. But most abundant in Frear Wood, near Chappel in the Dale; it grows in the lower part of the wood mixt with the *Trollius europæus*.'

He also says that *Polygonum Bistorta* 'is much used as food by the poor people in the months of April and May. They gather the leaves while young and tender, shread them, and, adding a little oatmeal, tie them up in a cloth, and boil them till they become a stiff pudding, which they eat with butter.' W. A. SHUFFREY, Arncliffe Vicarage, Skipton, 8th November 1901.

NOTES on MOSSES.

North of England Harpidia: Corrections.—Perhaps the following errata had better be corrected in my paper on Harpidia:—

Page 78, line 19. Dove should be Dore.

Page 88, lines 22-23. Staley Brushes and Wybunbury Bog should be in Province 9.

Page 90. The Fairbage Moor locality for *H. scorpioides* is in V.C. 57, Province 8.

I am indebted to the Rev. W. R. Linton for these corrections.—J. A. WHELDON, Liverpool, 18th March 1902.

Is *Webera cucullata* Schimp. a Derbyshire Moss?—This species is recorded for Derbyshire in Whitehead's 'North Derbyshire Mosses,' in Braithwaite's 'British Moss Flora' (Part XVI., Addenda), and in Dixon and Jameson's 'Student's Handbook,' and thus seems amply vouched for. These records, I believe, all rest on Mr. Whitehead's specimens from Kinder Scout, who, in a letter enclosing a little of his original gathering, wrote that he had himself named the moss, and that Dr. Braithwaite and Mr. Boswell had both confirmed the name. A comparison of this specimen with Norwegian *W. cucullata* led me to ask Mr. Dixon if the Kinder Scout plant was not rather an aberrant form of *W. nutans*. Mr. Dixon, after re-examining his specimens, confirmed this view. Dr. Braithwaite, on being appealed to, said that he believed the moss was named by Mr. Holt, who informed me that, on the contrary, he thought it referable to *W. polymorpha*. Thus Mr. Whitehead's specimens have been referred by competent bryologists to three different species, so that *W. cucullata* cannot with any certainty be regarded as a Derbyshire moss.—T. BARKER, Whaley Bridge, 3rd February 1902.

On the name Harpidium.—The publication in the March number of 'The Naturalist' of Mr. Wheldon's account of the Harpidia of Northern England induces me to point out that lichenologists have a prior claim to the name.

In its application to mosses the name only dates from 1856, with the publication of Sullivant's 'Musci and Hepaticæ of the United States,' in which it was used to designate a subgenus or section of *Hypnum*, thus superseding C. Müller's name of *Drepanocladus*, Syn. Musc., II., p. 321 (1851). The word coined by Sullivant from the Greek ἅρπη, a sickle, has reference to the 'more or less falcate-secund or circinate' leaves of the mosses included in the section, and had it not been used previously for a genus of lichens would be a very appropriate designation for the plants in question.

Unluckily, the year before—that is, in 1855—Körber, in his 'Systema Lichenum Germaniæ,' had coined and used the same name for a new genus of Placodine lichens, and in this case the word had reference to the curved, sickle-shaped, or lunulate spores.

Körber's genus was immediately adopted by Krempelhuber and Massalongo in the Conspectus prefixed to the 'Lichenes Exs. Italiæ' (1855), was recognised by Fries in his 'Genera Heterolichenum,' 1861, and is still maintained by those who follow the classification of Körber and Massalongo; e.g., Stein, 'Kryptogamen Flora von Schlesien,' 1879, and C. Sanio, 'Die Harpidien des Nördl. Finnlands,' 1890.

It is inadmissible to have the same name for two groups of plants, and it only remains for bryologists to give another name to the *Hypnum* section of mosses, either by falling back on C. Müller's *Drepanocladus*, or by inventing a fresh designation if from any reason that seems inapplicable.

I have only to state further that I am indebted to my good friends G. Stabler and E. M. Holmes for particulars respecting the use of the word among bryologists, as I am not versed in moss literature. J. A. MARTINDALE, Staveley, Kendal, 16th March 1902.

NOTE on LYCOPODS.

***Lycopodium annotinum* in Cumberland.**—All the stations for this plant given in Hodgson's "Flora of Cumberland" are in Westmorland. It may be well therefore to put on record that Mr. Geo. Stabler gathered it on the Cumberland side of Rossett Gill in 1889. I have the plant from the slopes of Bow Fell, in Westmorland.—JOSEPH A. MARTINDALE, Staveley, Kendal, 4th February 1902.

NOTES ON YORKSHIRE FUNGI.

Cadeby Fungi: a Correction.—In the account of the Fungus Foray at Cadeby, etc. ('The Naturalist,' November 1901, p. 374), *Erysiphe taurica* Lév. should be '*Erysiphe cichoracearum* DC.').—C. CROSSLAND, Halifax, 14th January 1902.

***Puccinia malvacearum* at Richmond.**—In looking through some old records of the Vale of Derwent Naturalists' Field Club I found a note that during their field meeting at Richmond, on 8th June 1898, some of the Mallows on the river bank near the town were found to be infested with the fungus *Puccinia malvacearum* or Hollyhock disease, as it is sometimes called. As I do not think the record has been made in any Yorkshire paper, perhaps it may not be out of place here.—J. W. FAWCETT, Satley, Darlington, 22nd November 1901.

Coprophilous Fungi collected near Sheffield.—During November and December last I made one or two gatherings of dung from fields near this city. Such microscopic examination as I was able to make led me to forward samples to Mr. Geo. Massee, F.L.S., for more detailed examination. Mr. Massee has now sent me the following list of the species he has observed up to the present time:—

On horse dung:—

Coprinus radiatus Fr.
Coprinus Gibbsii Mass. & Crossl.
Coprinus velox Godey.
Humaria salmonicolor Sacc.
Humaria granulata Sacc.
Lachnea crucipila Phil.
Ascobolus brunneus Cooke.
Ascobolus immersus Pers.
Ascophanus minutissimus Boud.
Ryparobius sexdecemsporus Sacc.
Isaria sulphurea Fiedl.
Arthrobotrys superba Cordá.

On rabbit dung:—

Coprinus niveus Fr.
Spumatoria longicollis Mass. & Salm.
Ascobolus glaber Pers.
Ascobolus vinosus Berk.
Saccobolus neglectus Boud.
Ascophanus microsporus Phil.
Ascophanus equinus Mass.
Ryparobius Leveilleanus Phil.
Ryparobius argenteus Berk. & Br.
Ryparobius dubius Boud.
Thelebolus stercoreus Tode.
Verticillium lateritium Berk.
Sphæronemella fimicola March.

Of the above one species, *Coprinus Gibbsii*, is new to science and is described in Messrs. Massee and Crossland's recent article on 'New Yorkshire Agarics' ('The Naturalist,' Jan. 1902, p. 1). Two species, *Coprinus velox* and *Arthrobotrys superba* are additions to the British Flora. *Spumatoria longicollis* and *Thelebolus stercoreus* are among the many interesting species added to the British Flora by Messrs. Massee and Salmon, and are described and figured in their paper, 'Researches on Coprophilous Fungi,' in the 'Annals of Botany,' Vol. 15, the former being the type of a new genus founded on specimens found in Epping Forest, and the latter being described from specimens collected at Kew and Reigate, Surrey.

This interesting list of species, the result of the examination of a very small amount of material collected almost haphazard in a few minutes, amply bears out the remarks in Mr. Massee's paper read at the recent Fungus Foray at Cadeby, and published in 'The Naturalist,' 1901, p. 333, as to the results which may be expected from the thorough prosecution of this hitherto neglected branch of Yorkshire Mycology.—THOMAS GIBBS, Sheffield, 12th February 1902.

LINCOLNSHIRE NATURALISTS AT TORKSEY.

Rev. EDWARD ADRIAN WOODRUFFE-PEACOCK, L.Th., F.L.S., F.G.S.,
Vicar of Cadney; Organising and Botanical Secretary, Lincolnshire Naturalists' Union.

The meeting of the Lincolnshire Naturalists' Union at Torksey, on the 11th of June 1901, was a distinct success. Forty members foregathered, and the drive from the railway station to Dunham Bridge through Laughterton, and back from North Clifton, in Nottinghamshire, through Kettlethorpe to the starting-point was everything that could be desired. From Torksey the members took train to Leverton, in Nottinghamshire, where the Rev. A. Thornley, the President, right royally entertained them with high tea and a sight of his collections of insects.

Mr. F. M. Burton, F.L.S., F.G.S., reported on the Geology as follows:—The steep, picturesque cliff forming the east bank of the river Trent, near the village and in the parish of Newton, is a continuation of the 'Upper Keuper deposits' at Gainsborough, which run southwards through Lea, Marton, and Torksey. The Rhœtic beds, under which the Keuper dips, while they are seen in conjunction at Lea, are, at Newton, two miles off on the east, owing, probably, to greater surface denudation in that quarter.

In England, the twofold division of the Triassic or New Red Sandstone—the 'Bunter' and 'Keuper'—(the third, or middle, division—the 'Muschelkalk'—so developed on the Continent, being absent) though distinctly visible in other parts of the country where the Keuper occurs, is, in this neighbourhood, not easily made out. This fact I pointed out in a paper at the British Association Meeting at Sheffield in 1887; and those who would study the question may do so by following the line from Gainsborough to Retford, where the entire beds are gradually unfolded to view, till the 'pebble beds' of the Permian crop out at the latter place.

There is evidently a great thinning-out of the Keuper deposits throughout this area, for not only are the 'Upper Mottled Sandstones' wanting, but there is an absence of any boundary line between the sandstones of the Bunter and the red marls above. There is, however, a remarkable change in the composition of the gypsum as the higher beds are reached. Quoting from my paper, referred to above, 'from the base of the Lower Keuper Sandstone, which rests directly on the 'pebble beds' at Retford to the Keuper Marls at Gainsborough,

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beds of light red clays, veins and blocks of gypsum, and thin lines of ripple-marked sandstone occur throughout; and it is only when the highest beds of the Keuper Marls are reached that any kind of stratification is discernible; bands of red, blue, and grey earths occurring just before the rocks dip under the Rhœtic beds at Lea.'

As to the gypsum, quoting again from the same paper, 'in the Lower Keupers at Retford, up to the Red Marls at Gainsborough, this mineral is invariably fibrous, or satiny, in character; in the higher beds, however, it changes, at first to rubbly patches, and, afterwards, to large, granular, or saccharoid blocks'; and this change, as Mr. W. Whitaker suggested at the time, may possibly mark the division of the strata, and be the only outward evidence of the passage from one bed into another.

The occurrence of a cliff in this neighbourhood is of sufficient interest to attract attention. At Gainsborough the river has carved out an escarpment in the Keuper on the east side of the town, which, after sinking to nearly a level at Knaith, rises again to form the well-wooded cliff at Gate Burton, and then, after a long stretch of low-lying land—past Littleborough, Marton, Torksey, and Laneham—it rises once more into the picturesque cliff of Newton, which was the main geological feature of this day's excursion.

It is to the river that we are indebted for all we know about the Keuper deposits in this district; and there are other lessons we may learn from it as well. Wherever river-valleys are wide, and have a flat, level plane-surface, like the valley of the Trent in this neighbourhood, the streams flowing through them are sure to wind along in curves, and, the more they wind, the wider the valley becomes. If the flow kept in a straight course the shape of the valley would soon be narrowed and altered. And the cause of this is obvious—wide, flat river-valleys being due to the advanced age of the rivers that flow through them, and their consequent loss of power. When rivers are young and in their prime they rush straight through all opposing obstacles, however hard, as the Trent did when it poured down, from the heights of its sources on the west, on to the great oolitic plateau, which then covered the land, far and wide, round Lincoln, cutting it through, and leaving behind it the 'Lincoln Gap,' with the wide denuded liassic area on the west; and, aided by the Welland, the Nen, and the Ouse, the 'great bay of the Wash on the east.' But when rivers, through

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advanced age and consequent rock-denudation, approach to nearly the level of the land over which they flow—a 'peneplain,' as it is called—they lose the impetuosity of their youth and wind slowly over the surface; and then every little rise in the ground, and any exposure of a harder rock than usual, turns them from their course; until we have, as the result, a broad expanse of marsh and fertile soil like that of the present Trent valley.

The Trent abounds with instances of this kind. Its windings are proverbial: and since the days of Shakespeare, they may well be described as 'classical'; for did not Hotspur say, when dividing up the land:

> See, how this river comes me cranking in,
> And cuts me, from the best of all my land,
> A huge half moon, a monstrous cantle out.
> I'll have the current in this place damm'd up,
> And here the smug and silver Trent shall run,
> In a new channel, fair and evenly:
> It shall not wind with such a deep indent,
> To rob me of so rich a bottom here.

Near Newton the river until recently flowed in two separate channels, forming an island, up to Dunham Bridge. One of these, however, the one on the west—still called the old Trent—has been cut off and partially filled up, and the whole force of the stream is now directed towards the cliff on the east. A little further down, in the low area opposite Laneham, a small portion of the land on the east of the river—as our vigilant organising Secretary has pointed out—belongs to the county of Nottingham. This may be due to a natural change in the river's course since the county boundary was defined—for the movements of the Trent are rapid in places—but it is more likely due to the river having, at one time, had two channels here, as at Dunham, to run in, one of which has been artificially stopped up; and that this is the more correct interpretation there are evidences in the locality: for a bank which must once have bounded the river's course can be traced running inland for a short distance, enclosing a low swampy tract, where the Flowering-Rush (*Butomus umbellatus*) and other aquatic plants are growing.

Near Torksey a very remarkable bend of the river can be seen, for there, while flowing due north, it is deflected by a slight rise in the land, and actually turned due south again, forming a narrow loop quite a mile in length, which, after approaching to within 250 yards of its own bed, turns round once more and continues its northern course.

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At Knaith, again, we have a long circular bend round Lea Marsh to Gainsborough. These are some of the more notable windings of the Trent in this region, and they are given merely as examples occurring in the neighbourhood; for, throughout its course, the river winds with scarcely a straight part in it, and it will continue to do so to the end; moving through its broad, flat valley, from one side to the other, as time goes on; always taking the easiest course, and giving way, more and more, as its strength dies out, to every opposing obstacle strong enough to resist it.

The plants of this part of the county and spot have been so often reported on that nothing new was taken. From Mr. J. S. Sneath's notes I take the following of what the Keuper marl yields under varying conditions:—*Reseda luteola, Helianthemum vulgare, Stellaria palustris, Malva moschata, Geranium pratense, Rhamnus catharticus, Astragalus glycyphyllos* (very fine indeed), *Lythrum Salicaria, Hydrocotyle, Silaus, Daucus, Cornus, Dipsacus, Chrysanthemum segetum, Tanacetum, Cynoglossum, Humulus, Eleocharis palustris, Scirpus lacustris, Carex sylvatica, Calamintha clinopodium,* and numbers of commoner species. The lime in the soil brings the flora into a line with that of the cliff and wold.

Mosses were most difficult to find, but Miss S. C. Stow reported the following for a very badly-worked district:—

Tortula muralis Hedw.	Bryum argenteum L.
Tortula mutica Ldb.	Bryum cæspiticium L.
New to N. Lincs.	Mnium rostratum Schrad.
Orthotrichum diaphanum Schrad.	Hylocomium triquetrum B.&S.

Mr. J. B. Robinson reported *Polyporus squamosus* in an abnormal form.

Mr. C. S. Carter, M.C.S., sends me the following list of shells:

Agriolimax agrestis.	Physa fontinalis.
Agriolimax lævis.	Limnæa peregra.
Helix pulchella var. costata.	Neritina fluviatilis.
Helix nemoralis.	Vivipara contecta.
Helix hispida.	Bythinia tentaculata.
Helix itala.	Valvata piscinalis.
Clausilia sp. (immature).	Anodonta sp. (fragments).
Succinea putris.	Sphærium lacustre.
Planorbis spirorbis.	Pisidium amnicum.
Planorbis vortex.	Pisidium pusillum.
Planorbis contortus.	

I noticed that *Helix itala* seemed to be found most plentifully under the trailing branches of *Astragalus glycyphyllos.*

Mr. Carter also took the Pseudo-Scorpion *Chthonius rayii* under a lump of gypsum.

The Rev. Alfred Thornley, M.A., reported on the Insects as follows:—The very strong wind blowing at the time offered great obstruction to entomological work; yet some very interesting things were taken. The following list is only a selection of the insects taken, commonly distributed species being omitted. I have also added several things taken by Dr. Eland Shaw and myself in a subsequent visit to the same locality on the 18th June:—

Of Lepidoptera *Tanagra atrata* L. was common by the drain-side, and a few common butterflies were the only ones observed.

Of Coleoptera several species were taken, as follows:—*Apion astragali*, a very local species, occurred by the thousand on *Astragalus glycyphyllos*. *Œdemera nobilis*, a fine example, was taken by Mr. Stow, almost in the very spot where I took one a few years ago. It is not uncommon in the South of England, but is rare in the Midlands. *Dacne rufifrons* and *humeralis* both occurred in fungi on an old ash stump; *humeralis* much more sparingly than *rufifrons*. *Ceuthorrhynchus asperifoliarum* and *Longitarsus femoralis*, somewhat local insects, could be obtained sparingly by beating flowers of *Cynoglossum*. A single example of the interesting *Pocadius ferrugineus* (the Puff-ball Beetle) was taken from the fungus on an old Ash stump. *Enochrus bicolor* was taken from the drain. *Sinodendron cylindricum* (the Rhinoceros beetle), a single example and several larvæ were taken from the old Ash stump. *Melanotus rufipes*; *Mycetophagus 4-pustulatus*, common; *Amara fulva*; *Epuræa deleta*; and *Gyrophæna manca*, in swarms in fungus, also occurred.

The Hymenoptera taken included:—A ♀ *Sapyga clavicornis*, a very local species, taken by Dr. Eland Shaw off a gate-post; it has been recorded from Notts, from specimens taken many years ago. *Nysson interruptus* Fab., a fine ♂, found by Mr. Goulding. A ♂ *Gorytes campestris* L., a local species, by Mr. Goulding. One ♀ *Crabro interruptus* from old Ash stump; this is a rare species. *Crabro clavipes*, *Chrysis ignita*, and *Cephus pygmæus*.

I give the list of Diptera in its entirety, as the distribution of the British Diptera is very little known:—

Dioctria atricapilla.	Chloromyia formosa.
Dioctria rufipes.	Chrysomyia polita.
Leptogaster cylindricus.	Ptychoptera albimana.
Platystoma seminationis.	Urophora solstitialis.

Dolichopus brevipennis.	Tetanocera sylvatica.
Syrphus latifasciatus.	Tetanocera reticulata.
Platychirus scambus.	Gymnopternus nobilitatus.
Pipunculus geniculatus.	Spilogaster communis.
Elgiva rufa.	Tipula nigra.

As to Orthoptera Dr. Eland Shaw reported the following species:—*Forficula auricularia* L., North Clifton, Notts; *Stenobothrus*, sp. numerous on Newton Cliffs (Dis. 6 N.), but too immature to determine the species; *Gomphocerus*, sp. probably *maculata* Thb., numerous in a wood near Laughterton (Div. 6 N.), immature.

Of Neuroptera were taken:—*Agrion puella*, *Ischnura elegans*, *Panorpa vulgaris*.

The Hemiptera taken were mostly immature, but imagos of *Rhopalotomus ater* were found.

Considering the time spent in the field the meeting was most satisfactory.

NOTE on LINCOLNSHIRE MOLLUSCA.

Drift Shells from the River Ancholme, in Cadney Parish, Linc. N. —Towards the end of February 1900 the river Ancholme was in heavy flood during mild weather. On the 28th my brother Max and I gathered the following species amongst the 'wrack' of dead herbage, seeds, etc., on the east bank above the towing-path. Since the date mentioned the Ancholme floods have followed frost and snow and have produced no drift shells. My kind friend, Mr. John W. Taylor, named the critical species for me:—*Vitrina pellucida*, *Hyalinia cellaria*, *H. nitidula*, *H. pura*, *H. crystallina*, *H. fulva*, *Helix rotundata*, *H. pygmæa*, *H. pulchella*, *H. aspersa*, *H. nemoralis*, *H. hortensis* (two specimens only), *H. arbustorum*, with its varieties *canigonensis*, *fuscescens*, *cincta*, and *flavescens*, *H. cantiana*, *H. rufescens*, *H. hispida*, *H. caperata*, *H. virgata*, *Clausilia bidentata*, *Cochlicopa lubrica*, *Succinea putris*, *S. elegans*, *Carychium*, *Planorbis vortex*, *P. carinatus*, *P. umbilicatus*, *P. corneus*, *P. contortus*, *Physa fontinalis*, *Limnæa peregra*, *L. auricularia*, *L. stagnalis*, *L. truncatula*, *Velletia lacustris* (on caddis cases), *Vivipara contecta*, *Bythinia tentaculata*, *B. leachii*, *Valvata piscinalis*, *V. cristata*. Single valves of *Unio pictorum*, *Anodonta anatina*, and *Dreissensia polymorpha* had been thrown upon the drift by the upcast of the undertow, with single or double valves of *Sphærium corneum*, *S. lacustre*, *Pisidium amnicum*, *P. fontinale*, and *P. pusillum*.

This is 47 species. *H. nitida*, found at Cadney, was not taken, nor *H. aculeata*. *H. itala*, which is in the watershed at Kirton, was absent with *B. obscurus* from the same spot. *Pupa cylindracea*, Cadney, and *P. muscorum*, South Kelsey, too. *Clausilia bidentata* I have never seen except in the drift in this watershed, though it is common enough at Scawby and Bottesford. In the former place *C. laminata* is common too. *Aplexa hypnorum* is found at Cadney, and *Neritina* plentifully in the river where I was gathering, but neither were seen. I cannot help being persuaded that the late Thomas Ball took *A. anatina* for *A. cygnea*, and confounded the two *Viviparæ*. This seems strange, too, for he records 'two or three *Pisidia*,' and Mr. Taylor has named three species from the river here. I wish I knew his localities—for instance, I have not yet met with *Planorbis spirorbis* in the Ancholme watershed. —E. Adrian Woodruffe-Peacock, Cadney, Brigg, 1st January 1902.

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NOTES on LINCOLNSHIRE MOLLUSCA.

North-west Lindsey Mollusca: South Kelsey Parish. On the 10th October 1901, I had a morning among the mollusca of South Kelsey (Div. 7 N.). The take consisted of *Arion ater, A. hortensis* and *Amalia sowerbyi*. There were no less than seven specimens of the last species feeding on some castaway grave flowers behind a tree in the churchyard. All the larger trees were marked with long lines of molluscan slime; some, as I could see with the fieldglass, to a height of twenty feet. The Rev. H. C. Brewster told me *Helix aspersa* was the great climber; but other species climbed at times too. *H. rotundata* abounded, as I have never seen it do in any other spot. *H. rufescens, H. hispida*, and *Agriolimax agrestis* were common, *Hyalinia cellaria, Hy. nitidula, Hy. pura*, and *Helix nemoralis* not rare. *H. pulchella* and var. *costata* were taken along with one dead *Pupa muscorum*. A most careful hunt gave no further indication of the presence of the last species. On the 26th Mr. Brewster sent me an apple which 'was picked about twelve feet from the ground.' It still 'contained the two destructive rascals found in it when taken in the hand.' They were *Helix rufescens* and *Arion hortensis* in a large hole they had made by eating. E. Adrian Woodruffe-Peacock, Cadney, Brigg, 9th December 1901.

***Anodonta cygnea* in North-West Lindsey.**—My father sent Mr. R. Tate specimens of this species from the fish pond at Bottesford moors in 1865, and I believe that as it is the only spot that I at present know for this species in North-West Lindsey, a short note about its past history may not be uninteresting. Though in the Trent valley and not far from that river the locality is not 'on Trent.' It is a distant and outlying portion of Bottesford township. The late George Todd, junior, for many years head gardener at Bottesford, told me the following:—'When I was a boy working for your grandfather he made yon fish pond, and brought the fish and this big water mussel to save 'em from a peat hole'—their native home—'about a quarter of a mile off, as the hole was going to be warped up. I helped to carry barrow loads of 'em in buckets from the old peat hole to the new pond, as I was not strong enough to wheel a barrow full.' The pond was made about 1837, I believe. This species still frequents the place in great numbers, and I showed Messrs. J. W. Taylor and W. Denison Roebuck specimens from it. The species in the Ancholme is *A. anatina*. I fear the late Mr. Ball, of Brigg, mistook it for *A. cygnea* L. I have never seen this species in that river bed, though, when it has been run off, I have walked miles along the drying mud during the last ten years.—E. Adrian Woodruffe-Peacock, Cadney, Brigg, 24th January 1902.

Variation in Helices in the Grimsby District.—In trying to acquire records for the Terrestrial Mollusca of the Grimsby district I have come across some most interesting forms of some of the abundant species. One particular spot which abounds with *Helix nemoralis* calls for particular note. One day, not having much time, I almost filled my vasculum with a creepy crawly horde of these creatures, and among them found some which both interested and confused me, so picking them out from the common forms, I sent them to Mr. Standen, of Manchester, to verify. The following was the result:—

Helix nemoralis.

1. An intermediate form between var. *undulata* and var. *interrupta*.
2. Var. *roseolabiata* + *bimarginata*.
3. An intermediate form between vars. *albolabiata* and *roseolabiata*.
4. A very pretty and unusual form combining three varieties, viz., var. *albolabiata* + var. *libellula* (colour) + var. *hyalozonata* — banding 00300.

I also took among them *Helix aspersa* var. *undulata, H. arbustorum* vars. *flavescens* and *pallida*. No doubt had I the time to visit this spot many other interesting forms could be collected.—Arthur Smith, 5, Cavendish Street, Grimsby, 13th December 1901.

NOTE on LINCOLNSHIRE HEPATICS.

Lincolnshire Hepatics: a Correction.—*Lophocolea videritata* is a mistake, I find; a misprint for '*L. bidentata* Nees.'—S. C. Stow, Court Leys, Brandon, Grantham, 8th February 1902.

NOTES on YORKSHIRE LEPIDOPTERA.

Hummingbird Hawkmoth at Wilton, Yorkshire.—On 10th October 1901 the Stationmaster at Wilton, Yorkshire, sent me a living specimen of *Macroglossa stellatarum*, which had taken refuge in his office. I kept it it alive until the 25th October.—William Hewett, York, 18th Jan. 1902.

***Sphinx convolvuli* at York.**—On 11th October 1901 a fine specimen of the Convolvulus Hawkmoth was captured whilst at rest on the top of the North Eastern Railway Goods Warehouse, York, and brought to me. Its proboscis, which I extended, measured 3½ inches from base to tip.—William Hewett, York, 18th January 1902.

***Ennomos erosaria* in Cleveland.**—I have to record the occurrence of this species in our district. A fine male was found at Ingleby Greenhow on 25th August 1901, on the grass slopes of one of the neighbouring 'banks.' The species is a new one to our local list.—Frank Elgee, 23, Kensington Road, Middlesbrough, 21st March 1902.

***Vanessa antiopa* and *V. io* at Middlesbrough.**—Many years ago I took a perfect specimen of the Camberwell Beauty (*Vanessa antiopa*) off the Pottery wall, which is about 500 or 600 yards away in a direct line from St. Hilda's Church, and often captured specimens of the Peacock (*Vanessa io*) upon the Dock Hill, but have not seen any since the enlargement of the Dock water area took place.—R. G. Clayton, 67, Douglas Terrace, Borough Road, Middlesbrough, 25th February 1902.

Sallow Season at Bishops Wood in 1901.—I got during seven visits to the Sallows 71 male *Tæniocampa leucographa* and 13 females. *T. populeti* was not common on any night, and most seen were as usual more or less worn. Both *T. gracilis* and *T. munda* were much commoner than usual, especially *T. munda*. Sallows were at their best on 16th April, and by the 22nd had lost all their attraction. On several of these visits I was accompanied by Mr. John Waddington, of Leeds; once by Mr. R. T. Cassal, of Ashby (now residing at Laxey, Isle of Man); and on the last visit by Mr. J. W. Boult, of Hull.—William Hewett, York, 24th Feb. 1901.

Hibernation of *Vanessa urticæ* at Middlesbrough.—On 17th March 1895 I took a living specimen of a common Tortoiseshell Butterfly (*Vanessa urticæ*) from off the window next to the vestry in St. Hilda's Church, Middlesbrough, and, excepting one winter since then, there has always been one of these insects in the same place. In November last I noticed, suspended from the stone-work, an apparently defunct fully-developed imago, but, on the 23rd instant, during service, it descended to the bottom of the window and was very lively. Of course records of the appearance of a Tortoiseshell Butterfly during winter are extremely numerous, but what is most peculiar in the present instance is that only upon one window, and that one of those most exposed in the church, should there have been a succession of the insects over so many years. The church stands in the Market Place, in the middle of the town, and is in the midst of a very smoky district, and the side which the insects have affected is due north. There is a small hole for the drainage of moisture at the bottom of the window, and they have probably made an entrance there.—R. G. Clayton, 67, Douglas Terrace, Borough Road, Middlesbrough, 25th February 1902.

NOTES ON THE LEPIDOPTERA OF SKELMANTHORPE DURING 1901.

B. MORLEY,
Skelmanthorpe, Huddersfield.

THE year 1901 has been a fairly successful one with the macro-lepidoptera at Skelmanthorpe, and although at certain periods insects have not been abundant, at others they have been out in great numbers, some of the common species being very plentiful.

A few new species have been added to the local list, making a total of 221 species taken within a radius of four miles of the village of Skelmanthorpe during the last six years.

The following account deals briefly with the more interesting work done in this district during the past season.

The first capture of the year was a lead-coloured form of *Phigalia pedaria,* the only one noticed as a departure from the ordinary type.

Hybernia leucophœaria produced nothing but the type, and though much attention was paid to the species, not a single variety was noticed, while in former years usually at least one-fourth of their numbers have been of the dark form.

Hybernia marginaria swarmed as usual, and after careful observation it was concluded that about one-tenth of their numbers were the variety *fuscata.*

Sallow bloom attracted crowds of the common *Tæniocampæ, Pachnobia rubricosa* being abundant, and *Tæniocampa incerta* and *T. stabilis* very plentiful and in great variety. Two imagos of *T. populeti* were also taken, being an addition to the local list.

Cidaria suffumata came out in some numbers, but was unusually true to the ordinary form; only one imago of the variety *porrittii* was taken, and none of the intermediate form between it and the type.

Larentia multristrigaria was disappointingly scarce, only two dark males being taken, while the ordinary type was very scarce indeed.

One of the principal features of the early season was the great abundance of larvæ after hybernation. *Tryphæna fimbria, T. ianthina,* and *T. comes* were very plentiful; *Aplecta nebulosa* was abundant, while *Noctua brunnea, N. festiva, N. baja, N. augur,* and *N. xanthographa* were extremely plentiful.

1902 April 1.

A few larvæ of *Boarmia repandata*, gathered from heather, produced very dark insects, one almost black. Larvæ of *Geometra pupilionaria* were gathered not uncommonly from birch. Sallow catkins yielded a good supply of larvæ of *Xanthia flavago*, and *X. citrago* larvæ were plentiful on lime. In the rolled-up leaves of sallow larvæ of *Cleoceris viminalis* were very common, a species entirely melanic in this neighbourhood.

Bladder campion pods gathered in 1900 produced imagines of the following species in the breeding cages:—*Eupithecia venosata*, *Dianthœcia cucubali*, *D. capsincola*, and *D. carpophaga*, the latter being new to the Huddersfield district list.

Amphidasys betularia appeared not uncommonly, but all the insects taken were of the black form. No record appears to exist of any other form ever having occurred in this neighbourhood.

Thyatira batis, *Hadena thalassina*, and *H. adusta* were fairly common at 'sugar,' and *Acronycta rumicis*, though very plentiful, were of the ordinary type, the very dark form being much more scarce than in the preceding year, while, on the contrary, *Agrotis segetum* was almost without exception either black or very dark brown. Another species which seemed to be entirely melanic was *Miana strigilis*, not one insect of the marbled form being noticed, a form which in former years has not been uncommon here.

Anarta myrtilli was very common, and *Eubolia plumbaria* extremely plentiful. *Cidaria silaceata* appeared somewhat freely, and *C. corylata* was abundant, as many as ten being noticed resting on one tree. One *Melanthia albicillata* was taken, a species very scarce here apparently, only a few odd specimens having been previously taken.

Eupithecia pulchellata, *E. assimilata*, *E. vulgata*, *E. castigata*, and *E. subnotata* were all common, while *E. nanata* appeared only sparingly.

Emmelesia decolorata and *E. albulata* were both common, and one specimen of *E. alchemillata* was taken, making an addition to the local list.

Several *Cabera rotundaria* were bred from larvæ beaten from birch in the preceding autumn, and *Notodonta dromedarius* and *Halias prasinana* were also bred from larvæ obtained locally.

Melanippe hastata and *M. tristata* appeared only sparingly, and *Lomaspilis marginata* was scarce. A fine ♀ *Cidaria truncata*, a scarce insect in this neighbourhood, deposited ova, which produced 41 very dark imagines in the autumn.

Tanagra atrata forced attention by its numbers, being everywhere abundant, even flying in the streets of the village in hundreds, and *Lycæna icarus* was scarcely less plentiful, it being very common in most meadows all over the district.

One specimen of *Epinephele ianira* was taken, an insect not seen here for twenty years or more.

Polyommatus phlæas appeared commonly, another species which had apparently almost disappeared. One *Vanessa io* was taken, also conspicuous by its absence of late years. *V. atalanta*, which appeared so profusely in 1900, was scarcely to be met with, while *V. urticæ* simply swarmed, being even more plentiful than the 'whites.' *Habrostola tripartita* and *H. triplasia* were fairly common, and *Cucullia umbratica* in gardens, along with *Plusia chrysitis* and *P. iota*, but only one *P. pulchrina* was taken. Several *Miana literosa* were taken at 'sugar,' making an addition to the district list. *Mania maura* was very plentiful, the dark form predominating, and very much variation was represented in *Apamea oculea*, *Hydræcia nictitans* being also very variable. *Orthosia suspecta* came freely to 'sugar,' and *Noctua glareosa* and *N. umbrosa* occurred abundantly. *Acidalia incanaria* appeared but sparingly, and the banded form of *A. aversata* was scarcely met with. *Polia chi* was found resting on walls very plentifully, the range of variety being very noticeable, a few very dark forms being selected, along with a very indistinctly-marked green form, and the variety *olivacea* was not uncommon. This species was frequently met with at 'sugar,' a peculiarity we have never noticed before, although it is one of the commonest insects of the district. *Noctua dahlii* was very common, a fact all the more surprising, seeing that it had never before been reported as a native of the district, and by its appearance in the most frequented collecting-place in the neighbourhood.

Another addition to the list of captures is *Luperina cespitis*.

Cidaria immanata, *C. testata*, *C. pyraliata*, and *C. populata* were all very common. *Anchocelis rufina* and *A. litura* were extremely abundant, and *Xanthia circellaris* was very common.

Cosmia paleacea was not uncommonly met with, twenty imagines being taken from 'sugar.' The type of *Miselia oxyacanthæ* was scarcely met with, but the dark form was abundant; a few were taken which were almost black.

Agriopis aprilina was not scarce, and *Cerastis vaccinii* was in profusion, with a good range of variety, some being very dark.

One curious example, picked from the crowd, was an aberration with the right fore-wing almost white.

Agrotis suffusa, Calocampa exoleta, and *Hadena protea* were fairly common, all of them being usually scarce in this district.

Two examples of *Xanthia aurago* were taken at 'sugar.' Three previous records have been made of this scarce species as a northern insect, within this district, during the last few years.

Orthosia lota and *Cerastis spadicea* were taken at ivy bloom, the latter being new to the district list.

Dasypolia templi appeared only sparingly, only a very few being noticed at gas lamps, and the results of turning over stones for the hibernating females were nil.

Of the late autumn Geometers *Oporabia dilutata* was very noticeable for its abundance and melanism, all the ♂s being of the dark suffused form, and very few of the ♀s were banded. *Hybernia defoliaria* was not common, but *H. aurantiaria* was very abundant, some of them being very dark and suffused.

Himera pennaria appeared in some numbers, and *Cheimatobia boreata* was unusually plentiful.

It may be of interest to remark in conclusion that, owing to the remarkably favourable summer, the earlier stages of the autumn insects must have been passed through in very suitable conditions, for during that season insects were always plentiful, and on very favourable evenings they were to be taken in very large numbers.

NOTES on YORKSHIRE NEUROPTERA, Etc.

Neuroptera and Trichoptera at Huddersfield.—During last season (1901) I took several species in the clear moorland stream which runs through Harden Clough, near Meltham, which have not previously been recorded for the Huddersfield district. The most interesting, perhaps, was the local *Tæniopteryx risi,* which occurred quite abundantly on June 14th, and in smaller numbers subsequently. At the beginning of August an almost equally welcome species turned up in *Philopotamus montanus,* also in plenty, and of a darker form than I have seen it from any other locality. *Perla cephalotes* and *Glyphotælius pellucidus* occurred in June, and *Limnophilus auricula* in August.—GEORGE T. PORRITT, Crosland Hall, Huddersfield, 7th February 1902.

***Phryganea minor* and *Limnophilus bipunctatus* at Skipwith, East Yorkshire.**—Seven specimens of Trichoptera sent to me recently by the Rev. C. D. Ash, and taken at Skipwith during last season by himself, included two of more than ordinary interest in *Phryganea minor* and *Limnophilus bipunctatus.* Of the former, the only previous Yorkshire specimen I know was from Askham Bogs, York, and the other, *L. bipunctatus,* a rare species generally, was also taken at Skipwith by Mr. Ash four years previously.—G. T. PORRITT, Crosland Hall, Huddersfield, 7th February 1902.

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MAY 1902. (Published 1st May 1902). No. 544. (No. 322 of current series.)

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LINCOLNSHIRE NATURALISTS AT REVESBY.

Rev. EDWARD ADRIAN WOODRUFFE-PEACOCK, L.Th., F.L.S., F.G.S.,
Vicar of Cadney; Organising and Botanical Secretary, Lincolnshire Naturalists' Union.

The 31st Field Meeting of the Lincolnshire Naturalists' Union was held at Revesby, the late Sir Joseph Banks' country seat, on 4th July 1901. It was under the leadership of Rev J. Conway Walter, a former President of the L.N.U. The weather, unexpectedly after recent rain, proved to be brilliant in the extreme, far too hot for 'the great exertion' required for 'proper field work.' A party of over 30 left Horncastle Station before 10 a.m., gaining additions in its progress through Scrivelsby and Moorby. At Revesby the work of the day was done. The members were conducted by the gamekeeper through the woods and by the Boston reservoir to make their researches in natural history. What with the great heat and the shortness of the time that could be allowed before the whole party assembled at the Abbey at 3 p.m., little could be done. The Hon. Mrs. Edward Stanhope then entertained the Union at a most sumptuous repast, and the choice art treasures of the place were viewed, which are so rich in past associations with the good work of Sir Joseph Banks.

Mr. F. M. Burton, F.G.S., reports on the regolith as follows:—This excursion in a geological sense, so far as field work is concerned, was not a success. Time and opportunity were both wanting for studying the strata we passed over. Had the former been available, it is only through the aid of pits and other excavations that we should have been able to get at the rocks beneath; for the whole of the land between Horncastle and Revesby, over which we drove, is covered by 'chalky Boulder Clay,' and we only got rid of it as we approached the village of Revesby, which lies on a bed of old river gravels.

Revesby Abbey, where we were so hospitably entertained, lies a little to the north of these gravel beds, and is on the 'Boulder Clay'; but to the south of the gravels, below Revesby Gate, the Kimmeridge Clay is exposed. This latter deposit forms an oblong-shaped outlier of about two and a half miles in length from east to west, and about a mile in the widest part from north to south. There is another exposure of the same formation on the north of the gravel beds, which runs in a very uneven form in a northerly direction, past East Kirkby, up to and beyond Bolingbroke, where it skirts the Spilsby Sandstone.

Below the first-mentioned exposure of Kimmeridge Clay we come to 'Enderby Fen,' and find ourselves on the silts, clays, and peat of the old fen-land.

These 'old river gravels' undoubtedly form part of that great drainage system of which the Trent was the chief feeder, but it is not safe to describe them as actually or solely deposited by that river, for no doubt other rivers drained the land between the Oolite cliff and the wolds on the north, and formed feeders to the main stream when it flowed through the 'Lincoln Gap' into the sea; and by this means not only might older beds of gravel, deposited long before by the Trent at earlier periods and at higher levels, be washed down and re-deposited in this district, but fresh material from the different localities drained by the side streams would inevitably be brought down by these streams, and mingled with the more recent deposits. Certainly only a very careful examination of the remains forming these Revesby gravel beds could entitle anyone to speak with authority as to their origin. The following are some of the problems which would require to be worked out in connection with the subject. Are there any rock remains, oolitic or cretaceous, in these gravel beds which must have been brought down by side-streams from the area to the north or north-west? Are there any flints, worked or unworked, any ice-borne erratics, or other foreign bodies, in them? Or are all the pebbles only the usual quartzites and other remains of the Trent gravel beds?

The area in question is easily accessible to those dwelling on the east side of the county, and it would well repay any geologist to make a thorough examination of the contents of these Revesby beds. He would not only find plenty of material to work on, but a careful and thorough search would certainly lead to very interesting, and might possibly lead to very important, results.

On the botany, Miss S. C. Stow and Mr. J. S. Sneath reported fully. About two hundred species were noted; and Sir Henry Hawley reported *Orchis pyramidalis* and *Ophrys apifera* from Tumby Wood. The best Revesby records were:— Some specimens of *Lychnis dioica*, a pale lavender pink; *Anthyllis vulneraria*, road-side, Moorby; *Myriophyllum spicatum*, *Sanicula* and *Ægopodium*; *Veronica chamædrys*, with upper leaves aborted into the multilarval galls by the pink grubs of *Cecidomyia veronicæ*; *Calamintha clinopodium* and *Lamium amplexicaule*; *Listera ovata* very fine in Revesby Wood, and *Tamus* most abundant.

Miss Stow recorded the following Mosses, Hepatics, and Lichens:—In Moorby churchyard were found—

Tortula muralis Hedw.
*Mnium undulatum L.
Eurhynchium prælongum B.&S.
*Eurhynchium confertum Milde.
*Porotrichum alopecurum Mitt.

In Revesby churchyard—

Grimmia pulvinata Sm.
Tortula muralis Hedw.
*Barbula unguiculata Hedw.
Funaria hygrometrica Sibth.
*Bryum capillare L.
Bryum argenteum L.
Pleuropus sericeus Dixon.
Brachythecium rutabulum B.&S.
Hypnum cupressiforme L.
Hypnum cuspidatum L.
Hylocomium squarrosum B.&S.

In Revesby Wood—

*Polytrichum gracile Dicks.
Campylopus pyriformis Brid.
Fissidens taxifolius Hedw.
*Weisia viridula Hedw.
Webera nutans Hedw.
Mnium undulatum L.
Mnium hornum L.
Mnium rostratum Schrad.
Thuidium tamariscinum B.&S.
Brachythecium rutabulum B.&S.
Brachythecium velutinum B.&S.
Brachythecium purum Dixon.
Eurhynchium prælongum B.&S.
Plagiothecium denticulatum B.&S.
Amblystegium serpens B.&S.
Hypnum cupressiforme L.
Hypnum cuspidatum L.
Hylocomium splendens B.&S.
Hylocomium squarrosum B.&S.
Hylocomium triquetrum B.&S.

By the Reservoir—

Funaria hygrometrica Sibth.
*Fontinalis antipyretica L.
Hypnum riparium L.

The only Hepatic found was *Lophocolea bidentata*, in Revesby Wood.

The Lichens found were *Cladonia pyxidata* Fr., *Parmelia parietina* L., Moorby and Revesby churchyards, and *Evernia prunastri* L., in Revesby Wood.

Mr. C. S. Carter, M.C.S., reported finding the following shells:

Helix pulchella var. costata Mull.
Cochlicopa lubrica var. fusca Moq.
Planorbis albus L.
Physa fontinalis L.
Limnæa auricularia L. var. gibbosa Taylor (dead specimen).
Vivipara vivipara L. (empty shell).
Bythinia tentaculata and var. excavata Jeff.
Anodonta anatina L.
Pisidium milium Held.

The identification of the last (*P. milium*) has been verified for me by Mr. Lionel E. Adams, who, in reply to inquiry, informs me that 'so far as he knows it has not been recorded for Lincs. before.'

For the Insecta the Rev. A. Thornley, F.L.S., F.E.S., reported that so much time was consumed in seeing various churches and other archæological curiosities that practically

All those marked with the asterisk (*) were new to Div. 10.

nothing could be done in Entomology. Mr. Burton secured a larva of *Calocampa exoleta*, which was found feeding on a species of *Lilium* in the Abbey gardens. But beyond this nothing of importance was reported, and Mr. Thornley took nothing himself that he considered worthy of record in 'The Naturalist.'

The day was an agreeable one, if of slight scientific value. Hearty votes of thanks and plaudits were awarded to Mrs. Stanhope, and to Mr. Conway Walter for his most successful exertions on behalf of the Union.

BOOK NOTICE.

The Victoria History of the Counties of England — Surrey.— Archibald Constable & Co. Limited.

We have received a copy of the Entomological portion of another county of the Victoria History—Surrey. As was the case with the History of Hampshire (noticed in this journal at p. 16 of the Volume for 1901), it has been edited by Mr. Herbert Goss, F.L.S., Secretary to the Entomological Society of London, who has again succeeded in enlisting the co-operation of the best specialists connected with the county in the various branches of the science. Well done as was the Entomological history of Hampshire, this of Surrey, as might have been expected when Mr. Goss was recording the work done in his own county, we think is still better done; for whilst the lists of Coleoptera and Lepidoptera are probably as complete and accurate as in the former volume, many of the so-called 'neglected orders' are in the Surrey volume almost as equally well done as the two more generally worked Orders. No doubt this is accounted for by the fact that a large part of Surrey is included in the London area, which contains so numerous a band of enthusiastic and experienced entomologists, and all of the county within easy access to the same workers. When we find that out of the 500 pages to which the first volume of Surrey extends, no less than 102 pages are appropriated by the 'Insecta,' we form some idea of the thoroughness with which the work has been handled. We are glad to note, too, that the General Editor of the Victoria History has not insisted on the preposterous arrangement and nomenclature which, in the first prospectus of the work, was suggested for the Lepidoptera. In the volume before us Mr. Goss is himself responsible for the Macro-Lepidoptera, but has had the assistance of Messrs. C. G. Barrett, T. H. Briggs, and Sydney Webb; whilst Mr. C. G. Barrett, assisted by Messrs. T. H. Briggs and Sydney Webb, is responsible for the Micro-Lepidoptera. The Coleoptera have been done by Mr. G. C. Champion, assisted by Messrs. H. St. J. K. Donisthorpe and R. W. Lloyd; a splendid compilation, but its value discounted, we think, by the fact that it is the only list in the volume in which definite localities are not given for the species. The Neuroptera and Trichoptera are well recorded by Mr. W. J. Lucas, assisted by Messrs. C. A. Briggs and R. McLachlan; the Aculeate Hymenoptera by Mr. Edward Saunders; the Chrysididæ by the Rev. Francis D. Morice; and the Phytophagous Hymenoptera by Miss Ethel F. Chawner, assisted by Mr. Alfred Beaumont and the Rev. F. D. Morice. The Orthoptera have a competent recorder in Mr. Malcolm Burr, assisted by Mr. W. J. Lucas; the Diptera have been done by Mr. Ernest E. Austen; the Hemiptera-Heteroptera by Mr. Edward Saunders, and the Hemiptera-Homoptera by Mr. G. Bowdler Buckton. We only hope the Entomology of all the future county histories will be entrusted to as competent and painstaking compilers. G. T. P.

NOTES ON THE WEEVIL-COCOONS OF THE FIGWORTS.

H. WALLIS KEW, F.Z.S.,
London; formerly of Louth, Lincolnshire.

Some time ago, when attempting to understand the manner in which the larvæ of the weevils of the genera *Hypera* and *Cionus* form their cocoons, the writer appealed to Mr. C. S. Carter of Louth, with a request that he would search for these structures, particularly those of the common Betony- or Figwort-Weevil (*Cionus scrophulariæ*) which were to be looked for on the Water- and Wood-Figworts, *Scrophularia aquatica* and *Scrophularia nodosa*. Mr. Carter was at first unsuccessful, but subsequently he became familiar with the cocoons of *Cionus*, and in July last sent me specimens on *Scrophularia aquatica* from Ticklepenny's Lock on the Louth Canal, and on the same plant from near the water-works in Hubbard's Valley, near Louth. The writer has found both larvæ and cocoons at Hampstead, in the Queen's Wood at Highgate, in a wood behind Darwin's at Down, etc., all on *Scrophularia nodosa*; and during a recent visit to Lincolnshire, in August, a fine growth of *Scrophularia aquatica* in a ditch by the roadside at Redhill, Goulceby, was observed to be much infested with the perfect-insects, which were seated on the plants in the vicinity of their empty cocoons. There are six or seven species of *Cionus* in these Islands, all of which are attached to the Figworts—as well as to the Mulleins (*Verbascum*)—but the perfect-insects sent to me by Mr. Carter from the two localities above noted, as well as those reared from Hampstead larvæ, and those found at Goulceby, all pertained to *Cionus scrophulariæ*. The beetle is easily recognisable, but to give the identification the value of authenticity I availed myself of the kindness of the Rev. Canon Fowler, who obligingly looked at the Hampstead specimens. Though somewhat local, this Figwort-Weevil is common where it occurs, and doubtless many readers of 'The Naturalist' have observed its curious cocoons, and viewed them inquisitively, and it is for this reason that I am venturing to call attention to the subject here, and to refer to some information already published by me in a series of 'Notes on Spinning Animals'—articles IX. and X., 'Larvæ of Weevils,' 'Science Gossip' (n.s.), VIII. (1901), pp. 70-1 and 137-8.

The larvæ of *Hypera* and of the species of *Cionus* with which we are here concerned, though legless, are not buried in

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vegetable tissues, as are so many Weevil-larvæ, but live like caterpillars on the external surfaces of plants; and their bodies are varnished with a layer of mucus which is excreted by an anal nipple. Confining our attention to *Cionus scrophulariæ*, we find that the little larva is slug-like and excessively slimy. It lives on the flowering spikes of the Figworts, on the small upper leaves, and among the buds, flowers, and young seed-vessels. It moves in a more or less caterpillar-like fashion, by means of ventral fleshy foot-like prominences, and according to authors it is helped to retain its position by its viscous mucus. This is probably true, but the mucus is not of a locomotory character like that of slugs, planarians, nemertines, etc.; the larva does not creep over a film of it, and thus, unlike the animals just mentioned, it does not leave a slime-trail in its path. When the larva is touched, and the finger slowly removed, the slime is drawn out into a very fine thread, which may attain a length of one or two inches before breaking. Exposed to the scorching rays of the mid-summer sun, and to the heavy dews and rains of that season, the larva doubtless requires its slimy-coat for protection; but it does not effectually protect the animal, as one might suppose would be the case, from the attacks of parasitic Hymenoptera, for several of my Hampstead specimens were ichneumonised, numbers of a small Hymenopteron emerging from the cocoon in place of the Weevil. Of two cocoons which I opened, one contained six and the other eight pupæ of the parasite; these were closely placed within the *Cionus*-cocoons, and were naked, having no cocoons of their own. The nipple which excretes the mucus is found at the base of the upper side of the anal segment of the larva; and, according to Perris, who has studied several species of *Cionus*, it is hidden in the tissues, but capable of protrusion; and the secretion, which is emitted on the preceding segment, gradually finds its way to all parts of the body.

The cocoons of both *Hypera* and *Cionus* are affixed to the plants on which the larvæ feed, and are notable from the fact that cocoons thus exposed are rare among Coleoptera; and they are further interesting from exhibiting, under certain circumstances, a striking protective resemblance to the objects among which they are placed. Those of *Hypera* are beautiful gauze-like structures, composed of threads of silk-like appearance, white, yellow, golden, or reddish in colour, and disposed in a single layer of network, generally with open meshes, through which the exceedingly agile pupa can easily be seen.

It was formerly supposed that these threads, like those of the larvæ of Lepidoptera, Trichoptera, Hymenoptera, and Diptera came from an oral spinneret; but it is now known that this is not the case, the matter being furnished by the anal nipple, from which it is taken and fashioned by the mouth.* In the case of *Cionus*, there is a statement in Westwood's 'Introduction to the Modern Classification of Insects' that the cocoon of *Cionus scrophulariæ* is formed with open meshes like that of *Hypera*;† but this is a mistake. Réaumur, De Geer, Perris, Osborne, Butler, and other writers have described the cocoons of various species of *Cionus*, and agree in stating that they are composed, not of threads, but of a continuous membrane.‡

The cocoons of *Cionus scrophulariæ* are found on the flowering or fruiting spikes of the food-plant, occasionally on the leaves, but more commonly on the stems and on the pedicels among the buds, flowers, and seed-vessels, and it often happens that they are placed at the top of a pedicel on or near a withered bud which has been injured by the feeding larvæ. As the larvæ are gregarious, many cocoons are often found on a single spike. A spike of *Scrophularia aquatica* which I gathered at Goulceby had eleven empty cocoons upon it, and there were ten Weevils crouching near. On *Scrophularia nodosa* at Highgate the cocoons were often more densely packed; and it sometimes

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* De Geer, 'Mémoires pour servir à l'Histoire des Insectes,' V. (1775), pp. 231-4; Kirby and Spence, 'Introduction to Entomology,' II. (1817), p. 298; III. (1826), pp. 215, 224; E. Perris, 'Notes pour servir à l'Histoire des Phytonomus [= *Hypera*] et des Phytobius,' Mémoires de l'Académie Nationale de Lyon: Sciences (n.s.), I. (1851), pp. 93-106; J. A. Osborne, 'On the Cocoons formed by *Hypera rumicis* and its Parasites, and *Cionus scrophulariæ*,' Entomologist's Monthly Magazine, XVI. (1879), pp. 16-8; C. V. Riley, 'The new imported Clover Enemy,' American Naturalist, XV. (1881), pp. 912-4; 'The Clover-Leaf Beetle,' Report of the Commissioner of Agriculture, 1881 and 1882, pp. 171-9.

† J. O. Westwood, 'Introduction to the Modern Classification of Insects,' I. (1839), p. 343; and see Rye, 'British Beetles,' 1866, pp. 194-5.

‡ Réaumur, 'Mémoires pour servir à l'Histoire des Insectes,' III. (1737), pp. 31-3; De Geer, tom. cit. (1775), pp. 208-12; Chapuis et Candèze, 'Catalogue des Larves des Coléoptères,' Mémoires de la Société Royale des Sciences de Liége, VIII. (1853), pp. 563-4, quoting Perris, Annales de la Societé Linnéenne de Lyon, 1847-9, pp. 291-302; Perris, 1851, l.c.; W. H. G., 'Note on the Betony-Weevil,' Hardwicke's Science-Gossip, 1876, pp. 17-8; J. A. Osborne, l.c.; and 'The Cocoon of *Cionus scrophulariæ*,' Hardwicke's Science-Gossip, 1880, p. 209; G. Dimmock, 'Standard Natural History,' II. (1884), p. 342; E. A. Butler, 'Curious Cocoons,' Knowledge, XVI. (1893), p. 227; W. W. Fowler, 'British Coleoptera,' V. (1891), p. 323.

happens that the spikes not only exhibit buds, flowers, and seed-vessels at the same time, but also carry the three stages of the insect—larva, pupa (enclosed in the cocoon), and imago or perfect-insect. This was the case with a spike of *Scrophularia aquatica* gathered by Mr. Carter in Hubbard's Valley, and of which he has sent me a photograph. At the top of the spike are buds and open flowers, and lower down well-formed seed-vessels; and in addition to four cocoons the photograph shows two larvæ and two imagines. The cocoon is a small, rounded oval, prolately spheroid structure, like a little inflated bladder, measuring about a fifth of an inch in the longest direction, and composed of a thin, continuous parchment-like membrane. It is attached to the plant by so small a part that its general outline is hardly interfered with; and in colour it is somewhat like parchment, but darker, and may perhaps be described as yellowish- or olive-brown. As stated by Osborne, it is sparsely covered in the middle region with raised goose-skin points; but these are not a conspicuous feature. De Geer, who was perhaps the first to describe the cocoons of this particular species, compares them to little bladders, and remarks that, though thin, they are strong, elastic, and a little transparent. Several writers have remarked, further, that they are wonderfully like the seed-vessels of the *Scrophularia* among which they are often placed; though perfectly exposed, says Butler, they are yet beautifully concealed by this resemblance to the fruitage of the Figwort. The likeness is certainly striking; but, as it seems to the writer, authors have, unintentionally of course, somewhat exaggerated it. As regards the manner in which the cocoons are made, Réaumur, who observed a species on Mullein, though aware that the cocoon consisted of a membrane rather than of threads, believed that he had seen in the larva an oral spinneret; but he was certainly mistaken. De Geer, though mistaken in thinking that some silk might enter into the cocoon, maintained that it was composed of the slimy matter of the body of the larva; and this remark, it is now known, well expresses the nature of the structure. Thus the cocoon of *Cionus* cannot

Part of a Figwort flower-head, with seed-vessels and cocoons of *Cionus scrophulariæ*. After Butler, Knowledge, XVI. (1893), p. 227. (Reproduced by permission of the proprietors of 'Knowledge.')

be said to be spun; but parts of the larva's proceedings are very like those of *Hypera,* which is certainly an aberrant spinner of remarkable character. Perris has watched the behaviour of several species, and Osborne has subsequently published notes relating exclusively to *Cionus scrophulariæ.* Stated briefly, it appears that when the larva is about to undergo its change to pupa, it fixes itself to the plant, and, remaining motionless with the body contracted, it augments the thickness of the layer of mucus which invests it, and which then gradually dries around the body, enclosing it completely. Then managing to detach itself from the layer, it finds itself free within a cocoon. Subsequently, however, the larva consolidates the dwelling, from within, by plastering it with mucus, which it takes from the anal nipple and spreads with the mandibles and palpi. In the original membrane there are small holes with everted edges—like those of a nutmeg grater on the rough side—sparsely scattered over the equatorial region of the cocoon; but these are soon plastered up by the enclosed larva, and they result in the formation on the outside of the structure of the small goose-skin points already referred to. When a newly formed cocoon is torn from the plant, it is found to have a small hole at the place where it was fastened; and, if the larva is still active, it immediately sets about repairing the deficiency. Looking through the hole, Osborne saw the creature plucking off, with its mandibles, little pellets of mucus from the anal nipple; and the matter thus obtained was stuck to the edge of the opening, and drawn out and moulded with the mouth into a membrane, which soon dried and resembled the rest of the cocoon. It was not until after consulting the writings of others, and putting together an account, that the present writer had an opportunity of seeing the cocoons of *Cionus scrophulariæ* and of observing the manner of their formation. In July 1898, however, on finding the insect at Hampstead, I brought home infested spikes of the *Scrophularia nodosa,* and kept them under observation in vases. Numerous little bladders had already been made on the pedicels of destroyed buds, and the larvæ which remained soon got about the formation of their temporary domiciles. After fixing upon a spot for this purpose, the larva becomes motionless, with its body contracted, but still attached to the plant, as during its activity, by the whole ventral surface. Its body-mucus has hitherto been transparent, but one now sees that a whitish opaque mucus is gradually covering the creature. This is first observed about the anterior extremity, and one's

impression is that the matter is oozing from the skin, the little larva appearing to be altogether inactive. Observing with a lens, however, one finds that the mucus is being slowly shot out, at stated intervals, in short thick jets, from the anal nipple, not upon the median line of the back, but laterally, the nipple being extended first towards one side, then towards the other, in strict alternation. The head of the animal is motionless, and the only sign of activity, other than that exhibited by the nipple, is a slight muscular movement observable on the body. The mucus is passed forwards and distributed, evidently by the muscular movement just mentioned, and it gradually dries, every part of the animal being ultimately covered with a regular membrane. After a time, when this membrane is complete and sufficiently dry, the larva detaches its body from it; and detaching its ventral surface from the plant, it assumes a curved position, the head and the tail being close together. The shape of the animal is now almost globular; it has doubtless lost some of its bulk from the continued discharge of mucus; and it is evidently hard at work moulding and stretching the covering. The result is that it finds itself free within a membranous, more or less spherical, investment, which must now be called a cocoon. The structure is sufficiently translucent for some time to enable one, by holding it to the light, to observe the proceedings of the enclosed larva. The creature is observed to be working with its head and mouth, and it is clearly seen at regular intervals applying to the anal nipple, taking away a mouthful of mucus, and working it with much diligence into the walls of the cocoon. After about an hour the structure is noticeably larger, and the animal has now room to move about freely within; it constantly changes its position, but always has its back pressed against the membrane, and it is in this manner, and by pressing with its head, and at the same time adding new material that the structure is enlarged and given its proper conformation. The larva continues for many hours to increase the substance of the membrane, but without making it thick or wholly opaque, and during all this time the regular applications to the nipple for mouthfuls of mucus are kept up. An individual which began to form its cocoon about mid-day, commenced this part of the work at 9.30 p.m., was continuing it at 11.30, and when I left the creature at 8 a.m. on the following morning it was still at work, still taking mouthfuls of mucus, and laboriously applying them to the walls of the cocoon. Even at this time, by properly arranging the light, I could not only

see the movement of the head over the belly to the nipple, but could also perceive the jet of mucus in the mouth, as the head was moved away. By cutting out a part of one of the cocoons, in order to get a better view, I saw the larva, with a jet of mucus in its mouth, attempting to repair the damage, as described by Osborne.

The semi-transparent condition of the cocoon is never wholly lost, and even when the insect has undergone its penultimate ecdysis and become a pupa, one can still see something of its form and position. The creature still retains a certain activity, and it is seen, when disturbed, executing a peculiar kind of movement within the cocoon, the effect being very curious when a spike of Figwort bearing numerous cocoons is held before a bright artificial light. Mr. Carter informs me that an individual which made its cocoon on the 10th August emerged on the 21st; and it is stated that the actual duration of the pupal stadium does not exceed eight days. When about to emerge, the perfect-insect cuts, with beautiful precision, a circular opening at one end of the cocoon, and thus comes out by a door, which sometimes falls away, sometimes remains attached, either widely open or ajar, by a small portion as by a hinge. The remarkable little creature, which but a few days ago was a slimy comparatively shapeless slug-like grub, is now a perfect Weevil with all its jointed limbs, antennæ, compound eyes, wings and wing-cases, and covered withal with a charming pubescence in a pattern of velvet-black and yellow-gray.

SOME WESTMORLAND PLANTS.

R. E. LEACH, M.A., F.L.S., F.G.S.,
The Croft, Yealand, Carnforth.

The following are new localities for some of the rarer plants of this county: as far as I am aware *Astragalus hypoglottis* L. is a new record.

Trollius europæus L. Near Rutter and Asby.

Helleborus viridis L. Near Hole's Foot (Mr. G. H. Heelis).

Aquilegia vulgaris L. In several places on the road-side between Appleby and Asby. Railway bank near Sandford Moss.

Berberis vulgaris L. Various places in hedge-rows.

Corydalis lutea DC. Wall at Crackenthorpe.

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Arabis perfoliata Lam. = ***Turritis glabra*** L. Two places on road-side near Clibburn. Also found on the north side of the Eden near Temple Sowerby by Miss Markham.

Viola hirta L. Smardale.

Geranium sanguineum L. One or two places near Asby.

Rhamnus catharticus L. Near Crosby Garrett.

Medicago sativa L. Railway bank near Crosby Garrett.

Astragalus hypoglottis L. In two places not very far from Morland (Capt. Markham).

Myrrhis odorata Scop. Bolton Bridge.

Filago minima Fr. Sandy ground near Sandford Moss.

Carduus nutans L. Near Crosby Garrett.

Tragopogon pratensis L. Near railway bridge between Clifton and Clibburn.

Vaccinium oxycoccos L. Clibburn Moss (Capt. Markham).

Pyrola minor Sw. Side of Clibburn Moss and near Morland (Capt. Markham).

Verbascum thapsus L. Near Clibburn Mill.

Linaria vulgaris Mill. Road-side near Brougham.

Linaria viscida Mœnch. Railway, Ormside.

Mimulus luteus L. For several miles on the Lyvennet. In the Eden at Temple Sowerby Bridge.

Epipactis latifolia All. Near Rutter and Drybeck.

Orchis ustulata L. Near Drybeck.

Orchis latifolia L. Not uncommon about Appleby.

Allium oleraceum L. Near Crosby Garrett.

Eriophorum latifolium Hoppe. Above Knock.

Rhyncospora alba Vahl. Clibburn Moss.

Lastræa spinulosa Presl. In one or two places not far from Appleby. I am sorry to see how much rarer such ferns as *Asplenium adiantum-nigrum, Phegopteris dryopteris,* and *P. polypodioides* have become in the last few years, and prefer to give no exact localities.

NOTE on LINCOLNSHIRE GEOLOGY.

Geology of Torksey Excursion: A Correction.—In my report on geology in connection with the meeting of the Lincolnshire Naturalists' Union at Torksey, in the April number of 'The Naturalist,' the word 'Permian' inadvertently appears instead of 'Bunter' in relation to the 'pebble beds' at Retford, in the eleventh line from the bottom of page 133.—F. M. Burton, Highfield, Gainsborough, 14th April 1902.

A NATURALIST'S HOLIDAY AMONGST THE CUMBERLAND SANDHILLS.

WALTER GYNGELL,

13, Gladstone Road, Scarborough.

A RESIDENT on the rocky coast of North-eastern England, especially if nature is to him an open and not a closed book, finds a new world in the broad stretch of sandy beach backed by the undulating sandhills—the characteristic coast of Cumberland, Lancashire, and some more southerly western counties.

It has been my pleasure to spend a few days in such a district, and the following notes, chiefly on bird-life, may be of interest to lovers of nature.

It was on the last day of May that I arrived at the selected hunting-ground and found that the more genial spring of the west was fully three weeks in advance of my home land of north-east winds and sea mists.

Having to change and wait an hour at a pretty railway station, I had scarcely left the platform when I heard the sweet notes of the Pied Flycatcher, whose æsthetic tastes lead him every summer to our English Lake District, where he may always be found in most abundance. Another hour's railway ride, winding up and down and occasionally crossing broad river estuaries, with now and then a peep at our higher English hills, and I stop again at a little hamlet, washed by the waves at every tide which comes up the estuary, and sheltered from the winds by high mountain and moor.

In this secluded spot many species of sea-fowl gather together in summer colonies, and scratch their shallow nests and rear their downy young in thousands.

The first care, after settling down at the comfortable old inn where I became the only guest, was to make the acquaintance of the steward of his lordship the land owner, and obtain his courteous permission to visit the bird colonies. Having arranged with this gentleman to my satisfaction, and made an appointment with the gamekeeper for next day, in the evening I took a gentle stroll in order to obtain a general view of the promised land. A pleasant lane, leading up towards the mountains, gave me the first full view of the stretch of lumpy sandhills running away to north and south for many miles, with the broad opening between the two ranges which marked the river's road to the sea.

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The sea itself, but two miles distant, was entirely obscured by the summer haze, but away over the mists full forty miles the topmost peaks of the Isle of Man 'shone in the light of declining day.' Full of pleasant anticipation, I returned to the little lane of whitewashed cottages and retired at a healthy hour.

Next morning a tremendous thunderstorm somewhat delayed my first introduction to the birds, but, the rain slightly abating, in company with the gamekeeper I took a boat, crossed the estuary, and landed on the shingly beach which runs up into bays among the sandhills. Walking over the undulating sand, in a few minutes we arrived amongst the Black-headed Gulls, whose agitation and excitement increased every moment as we approached their unprotected nests, scattered in hundreds amongst the little hillocks and hollows of fine loose sand, bare but for the scanty growth of fine rushes known as Marram-grass.

This species of gull, with sooty-brown head, pearl-grey back and white under parts, is one of the commonest; and in the neighbourhood of its haunts may often be seen following the plough twenty miles inland. The 1st of June, the day of our visit, was too late to find their eggs in great number. Most of the young were hatched and out of the nest, crouching in the scant cover or running before our feet, and so abundant were they that it was almost impossible to walk about without crushing them under foot. Pretty little creatures covered with yellowish down spotted with black, they were a constant source of anxiety to their bewildered parents whose querulous screams rent the air.

The nests are mere hollows in the sand, lined with the dead rush, which is mainly added during incubation. The eggs are usually two or three, rarely four, and these vary wonderfully in ground colour, which, usually a warm shade of stone, is occasionally pale blue; and the blackish-brown and ash-grey markings which usually embellish the eggs may be almost entirely absent. Thus, to select good varieties, it is necessary to visit the colony when all the birds are laying and then take your toll.

The rain, which had abated when we entered the gullery, now returned in torrents, and much marred the interest of bird study; but naturalists are ever waterproof, and, like Gulliver amongst the Lilliputians, we picked our careful way through the gull chicks to the highest part of the sandhills and approached the colony of Sandwich Terns, to see which was one of the chief objects of my visit. These birds rose in a small dense flock

from the summit of a little knoll; their whiter plumage and forked tails readily distinguishing them from the gulls, their close neighbours. Though the colonies are small the nests of this large species of tern are placed very close together on the ground, as many as thirty-six occupying a space no larger than a billiard table. More than half the nests contained only one egg each, and none more than two. These were richly blotched and scrolled upon a creamy ground colour, and handsomer than eggs of the gulls. As these birds are strictly protected, I only took two or three eggs from the hundred which I counted in this and two other smaller colonies in which the nests were again placed so close together as to almost touch each other. One bird, however, possibly outlawed from a colony, had laid her solitary egg in a nest fifty yards away.

Leaving the Sandwich Terns to return to their duties, we next sought the habitation of the Common Tern, the 'Sea-Swallow' of the fishermen. These graceful birds were in great abundance, skimming and sweeping through the air with that peculiar angular beat of the long wings which makes the flight of the tern unique. The head and nape are black, the beak and feet are red, and the general plumage like a gull in miniature. In hundreds they hovered over us, and constantly gave forth their grating cry 'tirrr-e-rrr,' the third syllable lower than the first. Carefully watching the birds to be sure of identity, I fancied that I saw some Arctic Terns, a closely allied species having a gull-grey instead of a white breast, but I afterwards found that I was mistaken, as in the dull light of a wet day the white under parts of a bird appear to be grey when seen from below.

Thus I learnt once more the naturalists' great lesson, which I would express in the following words: look twice and be quite sure three times before you are positive once.

Now we were as much too early for the breeding of the Common Tern as we were too late for eggs of the gulls. They had staked out their claim in a lower position than the one occupied by the latter birds in the great expanse of sand, and although scores of nests were in course of construction only one egg was found. Little artifice is needed in the formation of a nest, which is but a hollow scraped in the sand by the bird's feet, and afterwards lined with a few straw-like dead rushes. They were in all stages of construction, from the hollow with a single scratch, to the perfected and lined nest. But we were too early, and leaving the colony with the intention of returning

to it again in a few days, attention was next directed to a third species, the Little Tern, still smaller and less numerous than the Common species.

As with the other birds, *Sterna minuta* selects its own special breeding-ground, and this allotment we found on the sea shore at the foot of the 'hills,' but the birds being much fewer the nests were less easy to find, and only two or three of these saucer-shaped hollows were discovered. Again we were too early, a single egg being the only find.

The Little Tern is a miniature of the Common species, but its cry is less harsh and somewhat like the note of the Swallow. About the line of the spring high tides was the favourite position for their nests. Whilst seeking these and crossing the parallel lines of shingle which skirt the sandhills on the higher portion of the shore we were constantly disturbed by the rich flute-like whistle of the Oyster-catcher and its sharp alarm note 'click-kirleer,' so, when tired of the search, a hunt was made for nests of the latter, and after a little while the first was found on the top of a shingle ridge in one of the numerous bays amongst the sandhills. This seems to be a favourite position, although nests were afterwards found high up amongst the loose sand. The first nest, which contained three eggs, was interesting in being lined with the small broken shells of the shore, certainly placed there by the birds, though one would scarcely think with a view to comfort.

Still it rained! until, thoroughly drenched, a move was made for the estuary shore, where the boatman was signalled for to take us back again to the village. Whilst pacing up and down close to the landing-place I found a nest and eggs of the Ringed Plover, a bird which we had once or twice noticed whilst giving attention to the terns and other birds. The nest was a mere hollow in the shingle, and the four pointed eggs, marked like shore pebbles, were arranged as usual, the points together, somewhat in the form of a Maltese cross. This find was unexpected, as this little plover is an early incubator. Thus ended the first day's work.

Next morning the sandhills south of the village were explored, and access to this part of the coast was gained by a railway journey of a mile and a half and a short walk across some boggy fields. I had scarcely left the station when a pair of Redshanks were disturbed, whose ringing cries and great agitation told a tale of anxiety for young ones hiding in the long grass. One bird now and again perched on a cowshed and

stood upright on his long, bare, red legs. But it was much too late for Redshank eggs, so the sandhills were again taken in hand.

The day being bright and fair, other features of the sandhills now became apparent. In many places the ground was carpeted with patches of a beautiful little Pansy, probably a variety of the common field species, but of a rich blue colour. It was very abundant, and in its growth more suggestive of garden beds than a sandy desert. Another noticeable flower of the sandhills was the Sea Campion, somewhat like the Bladder-Campion of the fields, but of shorter growth. Wondering how these plants obtained their sustenance from such an arid soil, I dug up a pansy, and found the roots went straight down a foot through the sand.

Here, as on the north side, rabbits abound; their burrows in the bare sand occasionally provide a nesting-site for the Stock Dove, a bird which readily accommodates itself to circumstances, breeding in the cliffs of a rocky coast, or in hollow trees if it inhabit a woodland district. Little or no nest is made, early or late in the summer two white eggs are laid, and these are distinguishable from our other doves' eggs by their cream colour.

One of the most interesting denizens of the sandhills is the Sheldrake, and here several pairs seemed to be thoroughly at home, feeding on the mud flats up the estuary and nesting in the rabbit burrows, hence their common name 'Burrow Duck.' In their piebald plumage of black, white, and chestnut they are amongst our handsomest birds. I was much interested in their peculiar droning song, uttered whilst flying together in small parties. The 'dying duck in a thunderstorm' is alleged to sing with questionable merit, but the Sheldrake's crooning notes certainly struck me as being somewhat melodious. I did not on this occasion attempt to unearth the Sheld-duck from her burrow, having with great labour once dug out a nest in Somersetshire. This nest was four feet below the surface and contained seventeen cream-coloured eggs, deposited in the usual bed of down so commonly formed by ducks. I have known a nest to be eight feet below the surface, and I have seen thirty-two eggs which were taken by a friend of mine from one burrow, and thus I am led to suppose that polygamy is not illegal with Sheldrakes.

On these sandhills another colony of the Common Tern was found, occupying the lower slopes and summits just as in the other colony. Here I found the nests rather more advanced,

and visiting them again two days afterwards I counted eighteen eggs, no nest containing more than two. To find eggs in abundance and select varieties the middle of June would be the best time.

Another colony of the Little Tern was also found here, and, as on the north side, it was just above high-water mark, but I only turned up one or two eggs.

No second colony of the Black-headed Gull haunts this portion of the sandhills, but the Oyster-catcher was again in evidence, and I came across two or three nests whilst seeking those of the terns. More than once I was led to the nest by following the birds' little footprints in the soft loose sand, their numerous runs terminating in the nest. I became very much attached to the Oyster-catcher, which, so wary in winter on the Scarborough rocks, here allowed a near approach. A large flock feeding on the sands leisurely rose and flew past me. I counted them—fifty-four, not including some eight or ten left behind. One of their nests, which I found, was on the river bank half a mile up the estuary. When tired of the day's work it was interesting to sit quietly and watch them running about in and out of the water at the edge of the receding tide. The deep black and brilliant white plumage, with the coral-red beak and legs, make a conspicuously handsome bird, whose name Sea-pie is well deserved. One evening I well remember watching some half-dozen of them. Shortly they were joined by a few sombre-coloured Curlews which regularly come down from the inland moors. On the river estuary just before me a little domestic comedy in bird life was being enacted. A Common Tern was flitting up and down the stream, now and again hovering over the water. Presently another tern settled on the shore, evidently a domesticated female. She uttered a peculiar call-note, which was immediately answered by a sharp cry from her mate, who hovered a moment some twenty feet above the water and then plunged straight in like a stone, going clean under water. Then he rose with a small fish, brought it to his beloved and fed her with it. Again he went back to his fishing, and when successful returned once more to his mate. To a lover of nature the scene was an ideal one. Just across the river the little hamlet of whitewashed cottages; beyond, the wooded valleys running up amongst the moors which, spreading inland, rise higher and higher till they break up into the jagged peaks of the lakeland hills, culminating in Scawfell Pike, clearly visible some miles away, the highest of English mountains.

A day spent on the hills was unsuccessful. I found only a Ring-Ouzel's nest in a Rowan tree—an unusual situation growing on a gill side where the Buzzard used to have its eyrie. All day I saw no birds but those of our own Yorkshire moors.

And now there was nothing left but carefully to pack my selection of eggs for the home bringing, which, safely accomplished, the treasures now lay in my cabinet with all data appended. Here at any time, like a miser, I may gloat over them and recall the pleasures of one more holiday with my dear old mother Nature.

NOTE on YORKSHIRE HYMENOPTERA.

***Cimbex sylvarum* and *Opheltes glaucopterus* in West Yorkshire.**—Some time ago Mr. Arthur Whitaker sent me a specimen of this fine Sawfly, which he had taken in New Park Spring Wood, near Barnsley; and I have also the species taken by myself in Honley Wood, Huddersfield. I have also a fine and pretty Ichneumon (*Opheltes glaucopterus*) taken by myself at Meltham Mills, Huddersfield.—GEO. T. PORRITT, Crosland Hall, near Huddersfield, 4th April 1902.

NOTE on ORTHOPTERA.

***Periplaneta australasiæ* at Louth.**—On March 5th Mr. J. Larder sent to me a Cockroach, which has been identified as *Periplaneta australasiæ* by Dr. Eland Shaw, who remarks that he 'thinks this its first occurrence in Lincolnshire.' Learning from Mr. Larder that it was caught in one of the greenhouses belonging to Mr. G. Moody, florist, I went there, and was informed that these creatures had been breeding there for some time and were doing considerable damage to many choice plants, especially a magnificent 'Eucharis Lily.'—C. S. CARTER, 8, Bridge Street, Louth, 2nd April 1902.

NOTE on LINCOLNSHIRE PLANTS.

Lincolnshire Plant-Notes, Sapperton, Div. 15.—I was staying for a few days at Sapperton, Div. 15, and saw white forms of the following:—*Cnicus arvensis, Carduus crispus,* and *Scabiosa arvensis.* The first was very abundant, and some specimens of the last were a lovely pink. A large clump of *Centaurea Scabiosa* was a beautiful bright pink. It grew close to others of the normal colour in a limestone quarry. In the same spot were a score plants of *Cnicus eriophorus,* nearly four feet high. In the pastures were many scores of *Centaurea nigra,* in flower, only two to three inches high. I looked for *Caucalis arvensis* in vain. At Sapperton, Braceby, Hanby, and Lenton, all in Div. 15, and at Aslackby, in Div. 16, I found *Avena pubescens* very abundant in the meadows and by the road-sides. I sent Mr. Peacock two plants to verify—*Silene cucubalus puberula* Syme, a variety new to me, and *Carex verna,* which can hardly be mistaken when the membranous disc surrounding the base of the style on the nutlet is noted. Both are from Sapperton. I thought Mr. Peacock might like the seeds of the latter for his type collection. I shall have several additions to make to my personal lists of Divs. 13 and 15. If they never see the light in 'The Naturalist' they will be useful for the 'Flora of Lincolnshire.'—S. C. STOW, Court Leys, Brandon, Grantham, 25th July 1901.

NOTE on YORKSHIRE BIRDS.

Tengmalm's Owl in Yorkshire.—A beautiful specimen of this bird (*Nyctala tengmalmi*) was caught in a pole trap at Bickley on 7th Nov. 1901. —R. FORTUNE, Harrogate, 2nd April 1902.

Spotted Crake near Doncaster.—To-day I had brought to me, in the flesh, a specimen of the Spotted Crake (*Porzana porzana* L.), which was picked up at Bentby this morning. It had probably been killed by collision with telegraph wires.—H. H. CORBETT, 9, Priory Place, Doncaster, 9th April.

NOTES on NOTTS. BIRDS.

Blown Eggs in Nests (Notts.).—Mr. A. J. Palethorpe, of Bingham, Notts., writes:—'Two eggs were taken from a Blackbird (*Merula merula*)'s nest, and blown ones put in their place. These, however, were soon thrust out by the owners of the nest, and three eggs were afterwards laid in it.' Over thirty years ago I often placed blown eggs in nests when I wished to take well-marked specimens. The result was always the same; the birds either cast the eggs out or forsook. For a long time I could not find out why! I was a lad at the time and had 'taws' in my pocket! After I began 'marbling' the nest the birds never turned them out or forsook. I believe the birds thought the eggs to be bad from their light weight. This they could judge in a moment as they put their feet between them in preparing to brood on returning to the nest. Did the weight of the stones deceive them?—E. ADRIAN WOODRUFFE-PEACOCK, Cadney, Brigg, 5th April 1902.

Nottinghamshire Thrush Notes.—Mr. A. J. Palethorpe writes me from Bingham:—'My father, in season 1900, took four Thrush (*Turdus musicus*)'s nests; two contained five eggs, the others four each, altogether eighteen eggs. They were taken from nests on our estate one after the other, and the nests were built within a very short distance of each other. The eggs are all of uniform smallness, only slightly exceeding in size those of the Pied Wagtail. The blown shells are only half the weight of an ordinary Thrush's egg. These facts, and the sequence of laying dates point to the four nests being the work of the same pair of birds. Do you know anything of the laying capacity of birds such as our Thrush? How many clutches and eggs will they produce in a season?' My own experience is that Turdinæ, if their nests are destroyed, will go on building once every three weeks, say, through the months of April, May, and June. The Falconidæ have the same patience, their eggs failing gradually in number, size, and colouration. The Phasianidæ act in the same way. Of other families I have no personal experience.—E. ADRIAN WOODRUFFE-PEACOCK, Cadney, Brigg, 7th April 1902.

Nottinghamshire Cuckoo Notes.—Mr. A. J. Palethorpe (5th August 1900) sent me the following notes on the Cuckoo (*Cuculus canorus*):—'My father himself has taken the Cuckoo's egg from the nests of the following species in the neighbourhood of Bingham, Notts., within an area of a very few miles:—Sedge-Warbler (*Acrocephalus phragmitis*), Hedge-Sparrow (*Tharrhaleus modularis*), Whitethroat (*Sylvia sylvia*), Blackbird (*Merula merula*), Robin (*Erithacus rubecula*), and Greenfinch (*Ligurinus chloris*). With reference 'to egg markings and ground colouration,' our experience of Cuckoo's eggs is that there is generally an approximate adaptation to the colour of the foster-parents' eggs. My father is able to identify the foster-bird, if the Cuckoo's eggs are taken from the clutches in his collection, and to say which particular egg was found in the nest of a given species from its colouration. I think this is a very convincing proof of the adaptation of markings and colouration! We believe it is very unusual for a Cuckoo to lay its egg in the nest of a hard-billed bird like the Greenfinch. This point is not touched on in your paper on the Cuckoo (Nat., 1900, pp. 99-108).' I have had no personal experience except with the Pied and Grey Wagtails (*Motacilla lugubris* and *M. melanope*) and Hedge-Sparrow.—E. ADRIAN WOODRUFFE-PEACOCK, Cadney, Brigg, 5th April 1902.

THE CHEMISTRY OF SOME COMMON PLANTS.

P. Q. KEEGAN, LL.D.,
Patterdale, Westmorland.

It is with much pleasure that I am now able to contribute a further instalment of the paper on this subject which was published in 'The Naturalist' for February 1897. There is no need to rehearse the ideas and reasons stated therein for the special study and consideration of a department of botanical science so fraught with interest and yet so frequently ignored and perhaps contemned. Unquestionably the pursuit of plant analysis is difficult, and demands considerable experience, but after all a careful and systematic method of work is the grand desideratum. The petty alertness of the 'splitting' systematist is hardly needed. What is imperatively demanded is, so to speak, the collation of the memorials of what have gone before with the results and conclusions to be justly drawn from the experiment just before your eyes. However, I propose now to select certain prominent and familiar examples of certain orders of plants, commencing with the

Bracken. ***Pteris aquilina.*** Most of us no doubt can exclaim with Wordsworth, 'How often I have marked a plumy fern,' but how many of us ever try to detect the similarity or to discover the difference between the frond and the leaf. Anatomy here aids us greatly, but chemistry is more than one better. Accordingly we analyse the fronds or the frondlets at different periods of growth, say in May, August, and October. In May the results vividly recall those obtained on the examination of any of our forest leaves; for a very eminent feature is the presence in the frond of a large quantity of rutin, and, moreover, the indications of the predominance of proteid substances are manifested in every way, e.g., the ready detection of the nitrogenous compounds, the enormous proportion of potass, and of phosphoric and sulphuric acids in the ash. In August, i.e., the period of mature development of the frond, we find a change, for now we detect about 1 per cent. of wax, 5 resin, 6 to 10 tannin, 10 mucilage, over 40 fibre, and 6·1 ash. The amount of carotin is considerable, starch is abundant, but the rutin is now nearly all gone, and the tannin is extremely similar in its reactions to that of many of our forest leaves, i.e., it is a catechol tannin yielding on potass-fusion protocatechuic acid and phloroglucin. So far the similarity to the dicotyledonous leaf is complete. Nevertheless, there is a very serious difference, inasmuch as we

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SOME LESSONS FROM THE OBSERVATION OF ALPINE PLANTS IN THEIR NATIVE MOUNTAINS.

By Mr. A. Clutton-Brock, F.R.H.S.

[Lecture delivered May 18.]

It is possible to take an interest and delight in alpine plants from many different points of view, but no one, I believe, can take so keen an interest and delight in the spectacle of them growing in their native mountains as the gardener who tries to grow them in the very different conditions of his own garden. There is a danger, of course, that he may be too narrowly horticultural, that he may overlook all the wonderful beauty of the pasture flowers, of the claret-coloured Columbines mixed with white Orchises, of the Globe flowers and Campanulas that he knows already well enough how to grow, and that he may not be content until he reaches those high places where are the Androsaces and *Eritrichium nanum* and where he will learn scarcely any secrets that can be applied to the conditions of the ordinary English garden. But if he has a natural pleasure in all beautiful flowers, and if he is not over-eager to learn what cannot be learnt, and if at the same time he knows something, when he goes to Switzerland, of the cultivation of alpine plants in England, then his delight and interest in the beauty all about him will be enormously increased by his practical interest in the question how he can best reproduce some of that beauty in his own garden.

This is the question which, speaking as a gardener to gardeners, I propose to deal with to-day. My object, is—rather vaguely, I fear, and discursively,—to discuss what we can learn about the culture of alpine flowers from seeing them as they grow wild; and I will begin with a few words of warning about the manner in which an inexperienced gardener is likely to be misled if he thinks he can learn everything about alpine gardening in England from visiting the Alps in the flowering time. I believe that some of the worst mistakes in rock gardening, have come from a blind attempt to imitate natural conditions, without considering the inevitable differences between those conditions and any that can be provided in an English garden. I need scarcely say what those differences are; they are only too well known to all who have tried to grow alpines in England. But we must always bear them in mind when we try to draw conclusions from observation of plants growing wild in Switzerland as to what they will need if they are to prosper in England. And the difficulty of the problem is increased by the fact that some plants are far more adaptable than others, and that only experience will tell us which plants are adaptable and which are not. Thus many higher Androsaces and *Eritrichium nanum* and *Gentiana bavarica* are not adaptable at all; and no one can keep them alive for long in England. But *Ranunculus glacialis*, another very high alpine, and one that grows higher than *Gentiana*

bavarica, is more adaptable than a plant like *Pyrola uniflora*, which I have seen growing freely on the bank of a trench in a Swiss pasture only about 6,000 feet above the sea, so freely that if I had not happened to know something of its habits, I might have been tempted by its beauty to carry it home to a certain, if lingering, death in my rock garden. But, if one is in search of deceptive plants, one need not take a rare one like the *Pyrola*. There is the little *Soldanella alpina*, one of the commonest plants of the Alps. It grows everywhere, and you would think that it would be as easy to cultivate as *Campanula pumila*. Yet everyone knows that it is difficult to flower; and for this reason, that it first starts into growth with the snows melting all round it, and it needs the moisture produced by these to make it form its buds. If it begins to form them in the east winds of an English March they are likely to wither up before they can come out, and the only way to succeed with Soldanellas, at least in a dry Surrey garden, is to surround them in spring with moss that must be kept damp until the flowering time is over. Or take, again, the case of *Gentiana verna*, a plant even commoner, which grows in pastures, in the fissures of rocks, and even in the glades of pinewoods. You might suppose from its abundance in all positions that it would grow anyhow in your rock garden. In which case your plants would probably be dead within a couple of months of planting. For *Gentiana verna* is not an easy plant to grow, at least in a hot Surrey garden, for two very good reasons. The first is that, like *Pyrola uniflora*, it dislikes disturbance and is slow to make new roots when once it has been disturbed. Where it grows wild, it is, of course, never disturbed from the time when the seeds first germinate. But since it is difficult to raise from seed, most gardeners plant it in early spring; and then, being thus weakened by disturbance, it has to endure other conditions quite different from those which make it thrive in Switzerland. There when first it starts into growth and all during the flowering time it gets continued moisture from melting snows. In England it may experience droughts and east winds all through March and April; the consequence is that it makes no growth before the hot weather and dies in the first heat of June. In Switzerland one often finds it growing where it must be bone dry in late summer. But then it has got vigour enough in the earlier part of the year to endure any amount of later drought. In England it will not endure any drought until it is well established, which will often take a couple of years; and even then it will not make the same growth in our springs as among the melting snows of its native country. Thus in England it must be always protected against drought, and it is fatal to treat it as an ordinary rock plant. It needs a flat place low down in the rock garden that will catch all the rain that falls, and it needs watering in any hot dry weather.

There are many other plants, such as the rock Primulas, *Anemone alpina* and *Anemone sulphurea* and the Alpenroses, which one finds growing in very dry places, but which will not endure the same drought in England. On a slope above Fionnay I walked for over an hour among *Anemone sulphurea* growing as thick as buttercups, and with flowers larger than the largest of *Anemone japonica*. It was mixed at first with *Myosotis alpestris* and higher up with *Gentiana verna* and *Gentiana acaulis*. Already where the Anemones were finest and most abundant the

that digitoxin, and perhaps also digitonin, are only decomposed digitalin.

Woundwort. ***Stachys sylvatica.*** Notwithstanding the rather repulsive odour and quondam medicinal repute of this plant it is not very specially interesting from our point of view. The odour is due to the acetate of some alcohol allied to the terpenes. The leaves contain a considerable amount of carotin, and about 10 per cent. of an iron-greening tannin which does not precipitate gelatine, and is somewhat similar to caffeetannin, but it does not precipitate quinine, and ultimately turns brown when its ammoniacal solution is exposed to the air. Much resin of course may be expected and is found, also much proteid, but very little mucilage, and a moderate deposit of starch. The ash of the dried leaf amounts to 8·5 per cent., and is rather poor in potass and lime, so that on the whole the plant is not so exhausting to the soil as most of those aforesaid. The hue of the flowers is rather dull, and their colouring matter is not fully developed as might have been anticipated, in view of the abundance of volatile oil and resin indicative of an incomplete transformation of the products of deassimilation.

Heather. ***Calluna vulgaris.*** This is the emblem of solitude; its growth is slow and its life prolonged. It affects siliceous soils and eschews lime. In open elevated moors it is about one foot high, but in open woods on sandy soils it springs up erect some three or four feet. It is by no means a thirsty plant, and only contains about 8 per cent. of water. The chemistry is of rather special interest. The organs are abundantly charged with wax; there is considerable carotin, some fat, but not much resin. Quercitrin and quercetin are especially prominent, and form the basis of its special dyeing property for wool so popular in former times. The tannin amounts to about 6·5 per cent. and is iron-greening and phlobaphenic. Free phloroglucin occurs in all parts of the plant (distinguished from other Sympetalæ). Starch and oxalate of calcium are abundant; but the attempt to obtain from the plant a decoction capable of alcoholic fermentation—'Scotch whisky'—proved a miserable failure, and it was imagined that no real sugar was present. It does exist, however, both simple and combined in the glucosides arbutin and ericolin; a bitter principle called vaccinin is also found. The mineral matters (ash) of the Heather have been the subject of considerable investigation; in the dried plant it varies according to different experiments from 1·95 to 6·35 per cent., and (pure) contains from 30·9 to 48·1 per cent. of silica. My own analysis

of dried specimens gathered in September on rather dry gravelly moorland shows that they yield 2·2 to 2·6 per cent. crude ash which contains 13·9 per cent. potass and soda, 17 silica, 19·2 lime, about 6 oxides of iron and manganese, and 2·9 phosphorus (=6·6 P^2O^5). The leaves are of a decidedly xerophilous structure and last two or three years; they are rich in tannin, but devoid of starch and oil in winter. The flowers are of a brilliant purple or bright rose colour in northern latitudes, and yet, notwithstanding the powerful chromogens which minister to their embellishment, can never become blue. Altogether the chemical constituents of the Heather are extremely pronounced and powerfully developed—an admirable and most profitable study for the plant analyst.

Ragwort. ***Senecio jacobæa.*** The 'looped and windowed raggedness' of the foliar appanage of this plant has suggested the popular name. It seems rather a despicable example of a common weed, but nevertheless it is a special favourite of my own. As it rears its stiff and picturesque stem all solitary or in sparse patches from the bosom of a waste and plough-abandoned field just at the debût of autumn it diversifies the near landscape most affectingly and lends an unspeakable piquancy to the solemn scene. The starch of the leaves is not very durable and their carbohydrates are not specially convertible to acids: they contain about 2·5 per cent. carotin, wax, and fat, 10 tannin, and 5 resin and bitter principle; the aqueous extract amounts to 25 per cent. and is mostly of mucilage, with some glucose and inosite; oxalate of calcium is scanty, and there is 13·4 per cent. of ash very rich in potass. There is very little inulin in the plant. The tannin is identical with that universally present in the order Compositæ and seems to be a quinol derivative. The flowers are tinted by carotin enclosed in homogeneous chromoplastids derived from chloroplastids.

Enchanters' Nightshade. ***Circæa lutetiana.*** This is a sort of hide-away organism lurking in the shade of taller shrubs and hedge-rows, but it is of the most eminent interest to the plant chemist, inasmuch as it is one of our few native herbs that contain that perhaps not very good type of the general characters of tannins, but nevertheless a very distinctive and beautiful one in its reactions, viz., gallotannin. The root contains most, and is also fully charged with starch. There is considerable carotin and resin in the plant, and the dried leaves yield 11·9 per cent. of ash, only moderately rich in potass and lime, as behoves its retired habits.

1902 May 1.

NOTE on LINCOLNSHIRE MAMMALS.

Rat's Mode of Drinking (Alford, Lincs.).—One Saturday in July 1886 or 1887, after a spell of dry weather, being alone at my office, then in Alford, a thunderstorm came on. After the rain ceased I went into a back room, where my eye was about the same height as the lower edge of the tiles over the rear of the building. There I viewed a row of Rats (*Mus decumanus*), each with his head under the tiles lapping the fresh-fallen water as it ran off the tiles and down the gutter.—JAS. EARDLEY MASON, 42, Carholme Road, Lincoln, 5th April 1902.

NOTE on YORKSHIRE PALÆONTOLOGY.

***Ichthyosaurus thyreospondylus* at Speeton, Yorkshire.**—An interesting communication from Mr. C. G. Danford, of Reighton, was read at the last monthly meeting (20th March) of the Hull Geological Society.

Early in February, when examining a fresh exposure of the Kimmeridge Clay, to the north of Speeton 'Middle cliff,' Mr. Danford detected a small fragment of bone projecting from the cliff, some six feet above the level of the beach. A little digging soon showed some vertebræ and rib bones. Deeper and lower down came the larger bones of the jaws and paddles, these being succeeded by more vertebræ and long slender ribs. In all 53 vertebræ were found, disposed in a curve beginning about eight feet above the beach and ending a couple of feet below its surface.

The bones were carefully collected and submitted (in part only) to Dr. A. Smith Woodward, F.R.S., F.G.S., of the British Museum (Natural History), who pronounced the species to be *Ichthyosaurus thyreospondylus*, a form known to occur in the Kimmeridge Clay of the South of England, but not previously noted in Yorkshire.

It is gratifying to record that the specimen has been presented by Mr. Danford to the Hull Municipal Museum.—JOHN W. STATHER, Hull, 9th April 1902.

BOOK NOTICE.

It is with pleasure, an unexpected pleasure, that one looks over the contents of **Vol. 15** of the **Proceedings of the Barrow Naturalists' Field Club and Literary and Scientific Association,** just issued, covering the two years ending with March 1901. Folklore finds a place in 'Tree Myths and Forest Lore,' but it is quite impossible to gain any idea of what the speaker said from the condensed report. In 'A Visit to an Aquarium' we are told that sea anemones are found on Walney, but what the species is we are left in ignorance, and the writer of the paper says that twenty species are known in British waters. Are there not more than 60? In the 'Silurian Rocks of the Lake District,' p. 67, l. 4, a map is mentioned, but it is not present; on the next page is the question if Blackcombe was ever a volcano. I am told that the late Miss E. Hodgson demolished that idea in the Transactions of this very society, Vol. 2, p. 90. In the 'Rose and its Folklore' I must admit that I know nothing of John Gerard's poems; but if the statement is not based on a mistaken rendering of what Folkard says in his 'Plant-lore, Legends and Lyrics,' p. 524, it at any rate looks like it. A paper on 'Snails,' by Mr. Benney, of Bradford, is readable. Mr. Swainson, F.L.S., of Bolton, read what must have been good to listen to about 'Coral and Coral Islands.' Here again the condensation is too much. The 'Birds of Shetland' has of course nothing to do with North Lancashire, but it and Mr. Gaythorpe's capital 'The Blackbird in Furness' help to keep up the scientific side of the Transactions. But there is no indication, except in Mr. Gaythorpe's case, of any effort by any member to further the matter of local investigation. The address by Mr. Scott on 'Crabs and Lobsters' does not apply to natural history work in the list-makers' sense, but his work at Piel shows that before naturalists he could give an account of many things of interest.—S. L. P., 28th March 1902.

MARINE MOLLUSCA OF SANDSEND, YORKSHIRE.

Miss M. V. LEBOUR.

Radcliffe House, Corbridge-on-Tyne, Northumberland.

The following notes were made during a five weeks' stay at Sandsend in 1901. All the species mentioned below were found quite near the village and within tide-marks. Very few were ever thrown up on the beach, the masses of pebbles scattered about breaking nearly all those of a fair size. Therefore, with a few exceptions, those species not collected alive on the rocks were minute shells in small patches of shell sand.

GASTEROPODA.

Fam. DORIDÆ.

Doris tuberculata (Cuvier). One very fine specimen under a stone among the rocks at spring-tide.

Doris bilamellata (L.). Profusely covering a large rock only uncovered at spring-tides. This species was spawning in the middle of August. The delicate white spawn was all over the rock and the stones near.

Doris aspera (A.&H.). Very common under stones among the rocks between tide-marks, both white and pale yellow, the former being more common.

Doris johnstoni (A.&H.). Two fine specimens with the sponge *Halichondria panicea* (Johnston), which it so closely resembled that I very nearly passed it over. The branchial cavity was exactly like one of the oscula of the sponge, and the colour and what few markings there were, also the same. Both were yellowish-white, with a few minute darker spots. I do not know the characters of this sponge sufficiently to venture to give an opinion as to this being a case of mimicry. Certainly the facts are suggestive.

Fam. POLYCERIDÆ.

Polycera quadrilineata (Müller). Common on *Delesseria sanguinea* at spring-tides in shallow rock pools. These were spawning from the end of July to the beginning of September.

1902 May 1.

Goniodoris nodosa (Mont.). This is the commonest nudibranch at Sandsend, under stones between tide-marks, frequently with *D. aspera*.

Fam. EOLIDÆ.

Eolis papillosa (L.). One specimen on seaweed at spring tide. This species must be common, judging from the quantity of its pretty pink worm-like spawn which is to be seen all over the rocks.

Fam. CHITONIDÆ.

Chiton fascicularis (L.). Common at spring-tides under stones among the rocks.

Chiton ruber (Lowe). Common at spring-tides and at the roots of *Laminaria digitata* thrown up on the beach.

Chiton marginatus (Penn.). Very common all over the rocks and extremely variable.

Fam. PATELLIDÆ.

Patella vulgata (L.). Very common and in great variety.

VAR. ***cærulea.*** Common.

VAR. ***depressa.*** A few specimens.

Patina pellucida (L.). Very common on seaweed and rocks. Some specimens growing to an enormous size.

VAR. ***lævis.*** Very common.

Acmæa testudinalis (Müller). Very common on the rocks at spring-tides in great variety.

Acmæa virginea (Müller). Very common in shallow rock pools.

Fam. CAPULIDÆ.

Capulus hungaricus (L.). Very young specimens common in shell sand.

Fam. TROCHIDÆ.

Trochus cinerarius (L.). Very common all over the rocks.

Trochus tumidus (Mont.). One worn specimen in shell sand.

Trochus helicinus (Fab.). A few specimens in shell sand.

Fam. LITTORINIDÆ.

Lacuna divaricata (Fab.). Very common on seaweed.

Lacuna pallidula (Da Costa). Common on seaweed.

Lacuna crassior (Mont.). Small form, common under stones among the rocks at spring-tides. These were a beautiful rose-pink when fresh, which very soon faded.

Lacuna puteolus (Turton). A few specimens on seaweed.

Littorina littorea (L.). Very common on the rocks; black, red, and striped varieties.

Littorina obtusata (L.). Very common on the rocks, chiefly dark varieties.

Littorina rudis (Maton). Very common on the rocks and in crevices of the cliffs in great variety.

Littorina neritoides (L.). A few young specimens in crevices of rocks near high-water mark.

Rissoa parva (Mont.). Very common under stones among the rocks.

Var. ***interrupta.*** Still more common than the type under stones and on seaweed.

Rissoa punctura (Mont.). Fairly common in shell sand.

Rissoa costata (Adams). Two specimens in shell sand.

Rissoa striata (J. Adams). Extremely common under stones among the rocks between tide-marks.

Var. ***arctica.*** Very common in shell sand.

Rissoa semistriata (Mont.). Common under stones between tide-marks.

Hydrobia ulvæ (Penn). One specimen in shell sand.

Fam. SKENEIDÆ.

Skenea planorbis (Fab.). Not common in shell sand.

Fam. PYRAMIDELLIDÆ.

Odostomia unidentata (F.&H.). A few specimens in shell sand.

Odostomia acicula (Philippi). One specimen in shell sand.

Odostomia interstincta (Mont.). A few specimens in shell sand.

Odostomia albella (Loven). One specimen in shell sand.

Fam. NATICIDÆ.

Natica catena (DaCosta). Small specimens common in shell sand.

Fam. VELUTINIDÆ.

Velutina lævigata (Penn.). Common in shell sand.

Fam. BUCCINIDÆ.

Buccinum undatum (L.). Common among the rocks.

Purpura lapillus (L.) Very common all over the rocks.

Fam. NASSIDÆ.

Nassa incrassata (Strom.). Very common under stones among the rocks at low-water mark.

Fam. PLEUROTOMATIDÆ.

Pleurotoma turricula (Mont.). Common in shell sand.

Pleurotoma rufa (Mont.). Common in shell sand.

Pleurotoma costata (Mont.). One specimen in shell sand.

Defrancia linearis (Mont.). Common in shell sand.

Fam. CYPRÆIDÆ.

Trivia europæa (Mont.). Very common. Thrown up everywhere on the beach.

Fam. BULLIDÆ.

Utriculus truncatulus (Brug.). Common in shell sand.

Utriculus hyalinus (Turton). One specimen in shell sand.

Utriculus obtusus (Mont.). One immature specimen in shell sand.

Philine catena (Mont.). Two incomplete specimens in shell sand.

PELECYPODA.

Fam. ANOMIIDÆ.

Anomia ephippium (L.). Young specimens very common under stones among the rocks, large detached valves often thrown up on the beach.

VAR. ***aculeata.*** Common with the type.

Fam. OSTREIDÆ.

Ostrea edulis (L.). A few detached valves thrown up on the beach.

Fam. PECTINIDÆ.

Pecten opercularis (L.). A few detached valves of young specimens in shell sand.

Pecten pusio (L.). Detached valves common on the beach.

Pecten varius (L.). A few detached valves in shell sand.

Fam. MYTILIDÆ.

Mytilus edulis (L.). Very common among the rocks, of small size.

Modiola modiolus (L.). Common among the rocks.

Modiolaria marmorata (Forbes). Detached valves common in shell sand.

Fam. ARCIDÆ.

Nucula nucleus (L.). One valve in shell sand.

Nucula nitida (Sow.). One small specimen in shell sand.

Nucula tenuis (Mont.). One specimen in shell sand.

Fam. KELLIIDÆ.

Montacuta bidentata (Mont.). A few detached valves in shell sand.

Kellia suborbicularis (Mont.). Common. Alive under stones at spring-tides.

Fam. CARDITIDÆ.

Cyamium minutum (Fab.). A few detached valves in shell sand.

Fam. CARDIIDÆ.

Cardium edule (L.). Not common, thrown up on the beach.

Cardium fasciatum (Mont.). Common in shell sand.

Fam. VENERIDÆ.

Venus gallina (L.). Common on the beach.

Artemis lincta (Pult.). Broken specimens thrown up on the beach.

Tapes pullastra (Mont.). Common, thrown up on the beach.

Tapes virgineus (L.). One young specimen in shell sand.

Fam. TELLINIDÆ.

Tellina fabula (Gronovius). Common, thrown up on the beach.

Tellina balthica (L.). A few specimens thrown up on the beach.

Donax vittatus (DaCosta). Several detached valves thrown up on the beach.

Fam. MACTRIDÆ.

Mactra subtruncata (DaCosta). A few detached valves thrown up on the beach.

Mactra elliptica (Brown). A few detached valves thrown up on the beach.

Mactra stultorum (L.). A few specimens thrown up on the beach.

Scrobicularia alba (Wood). Common in shell sand.

Fam. SOLENIDÆ.

Solen siliqua (L.). Common on the beach, but very seldom perfect, owing to the stones scattered about.

Fam. MYIDÆ.

Mya truncata (L.). Common, thrown up on the beach.

Fam. SAXICAVIDÆ.

Saxicava rugosa (L.). Very common in the rocks.

VAR. ***arctica.*** Common in the roots of *Laminaria digitata.*

Fam. PHOLADIDÆ.

Pholas crispata (L.). Very common in the rocks.

NOTES on MOLLUSCA.

Mollusca in Louth District.—In February and March I found *Helix hortensis* (shells) in Haugham and Ruckland, *H. arbustorum* in Ruckland, and *H. virgata* in Oxcombe, all new localities.—C. S. CARTER, 8, Bridge Street, Louth, 2nd April 1902.

***Limnæa peregra* monst. *decollatum* at Rossington, South-West Yorkshire.**—A small shallow pond at Rossington swarms with small *L. peregra.* These are all decollated. The only other shells found in the same pond were *Planorbis albus.* I enclose specimens of both.—H. H. CORBETT, Doncaster, 6th April 1902.

***Ancylus fluviatilus* in Windermere Lake.**—While staying at Ambleside last autumn I found this freshwater limpet abundant on stones at the head of the lake. This is an unusual 'habitat' for the species, and it occurred to me that it must have been introduced into the lake by the Rothay and Brathay rivers, and this I found to be the case; for, though I did not search in the river beds, I found the shells on stones in Rydal Water, from which the Rothay flows into lake Windermere, and I traced them in a stream flowing down from Loughrigg Fell into Rydal Water. All the specimens I saw in lake or brooklet were of small size and dark coloured. —F. M. BURTON, Highfield, Gainsborough, 14th April 1902.

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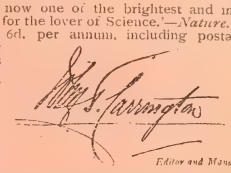

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THE FENLAND SOILS.

Rev. EDWARD ADRIAN WOODRUFFE PEACOCK, L.Th., F.L.S., F.G.S.,
Vicar of Cadney; Organising and Botanical Secretary, Lincolnshire Naturalists' Union.

No one can understand the meaning of the phrase 'Fenland Soils' who is not a native of the level and something of a geologist. The maps, pictorial diagrams, and illustrations I show you [The Spalding Gentlemen's Society] this evening are for the purpose of bringing home this truth. It is a practical as well as a scientific fact, as I hope I shall be able to demonstrate. It was pointed out years ago that the past and present shade into one another in the Fenland area—geological time gradually changing into existing circumstances, as the fauna and flora of the deposits and that of the time being prove.

During the Tertiary Epoch, especially in Newer Pliocene time—which has not left a fragment of a bed in Lincolnshire—the county stood at a much higher level than at present. One chief river flowing through the now much-denuded Lincoln Gap, joined by a number of smaller tributary streams flowing from the west and south-west, cut out the huge basin of the Fenland in the Secondary strata. The emboucher gap of this river system is 20 miles across from the chalk at Skendleby, in Lincolnshire, to the same rock at Hunstanton, in Norfolk. This, however, gives but a poor idea of the Fenland proper, which lies within the entrance chalk barrier. From Greetwell, in Lincolnshire, to Quy-cum-Stow, in Cambridgeshire, the distance in a bee line is 74 miles across peat and silt only. In the other direction, from the west of Braceborough, in Lincolnshire, to Wormegay, in Norfolk, it is 36 miles. The depth cut down by this ancient river system is from 1,000 to 2,000 feet. As the Upper Chalk is wholly missing in this county, having suffered denudation by marine or subaërial agencies as it rose gradually from its deep-sea bed, and later from the ice-plough of the Pleistocene Epoch—and the levels are not the same as formerly—it is quite impossible to be more precise. The whole of the Chalk and Neocomian strata were cut through and removed oceanwards, and the Kimeridge Clay and even a part of the Oxford Clay were cut out. Nothing could resist the attrition and scooping power of the water from the then high lands of the west. As far as I know no contemporary gravels, sands, or silts of the Tertiary River period have been observed, neither are they likely to be discovered. It is

a question whether there was a 'North Sea' during the earlier time of the formation of the Fenland basin. In Middle Tertiary time, in all probability, Britain was joined to Norway by the Orkneys and Shetlands, and to Iceland by the Faroes. In Oligocene times the old Fenland river system, if it then existed, must have drained into a southern sea, where France, Germany, and the Netherlands are now situated. If we put the Fenland basin denudation period much later, as I believe we should, in late Pliocene times the detritus of the river would be discharged many miles to the east of our present coast line into what would be then a continental river rather than the ocean. The Thames and Rhine would be other branches of this stream, and the Fenland one of its middle height valleys. Certainly in Pleistocene times, the forest period before the peat formation, a large river only would be found where the North Sea rolls at present. The only point for us to notice specially is that all the material cut out of the Fenland basin was swept out of our area completely.

The Pleistocene, Quaternary, or Modern Period, began with the increasing cold of Pre-Glacial time. When it reached its local climax in the Chalky Boulder Clay Period of the Ice Age, the whole of the Fenland basin was practically covered with Boulder Clay, gravel, and sand, under a vast sheet of ice. The ice stream came from the N.E. along the deepest part of what is now the ocean bed. The north of England and Scotch ice was deflected by the Scandinavian ice-stream, which lay still further to the east, over east Yorkshire and the whole of Lincolnshire. It came to us from the N.E. In the Chalky Boulder Clay chalk predominates; there is also much Neocomian, but distant boulders are found from the N. of England, Scotland, and Norway. They vary in proportion to the nearness of the localities from which the supply has been transported. The Boulder Clay is said to be 400 feet thick at Boston, and at one time must have filled the whole basin of the Fenland. It is now covered by thin beds of the Fenland deposits of Pleistocene age except in a few spots. A geological map of the Fenland shows no less than 17 islands of Boulder Clay or older strata rising above the level of the true Fen beds. In many cases they are capped with gravel of glacial origin which represents former Boulder Clay. In Lincolnshire, Stickney and Sibsey are instances, and on the south, along with many others, are Thorney, Whittlesea, March, and Chatteris. The Isle of Ely is so large as to enclose a big stretch of peat

within its boundary called Grunty Fen. The Fenland deposits lie on this Boulder Clay floor, which has undoubtedly been much denuded by marine wave action in a shallow sea, after the retiring of the great ice-sheet.

The Beds, or partial accumulations, lying on the Boulder Clay, from the lowest upwards, are as follows:—

1.—Old Gravels of Palæolithic Age.
2.—Fen Beach and Floor Gravels.
3.—Forest Period.
4.—Peat.
5.—Shell Marl.
6.—Silt.
7.—Upper or Modern Peat.

You must understand this record is only roughly approximate. During Pleistocene times, since man's advent in Great Britain, there seem to have been many changes of level in restricted areas, with mingled forest, peat, and silt formation.

Two periods can be clearly distinguished in the deposits immediately above the Boulder Clay. The Palæolithic Period was a time of prevalent on-shore winds, and the deposit is truly estuarine, and has a marine and shore facies. This period is almost equally rich in specimens from land and marine sources of supply. The lists of shells are too long to give here, but may be found in full in the Survey Memoir. The Fen Beach and Floor Gravels and Sand show a different state of circumstances, a shallowing sea, which was not silt- and warp-producing, and an off-shore wind. These gravels are wholly unfossiliferous. They look like the production of rough wave action on a very flat shore, or shallow sea.

As this period passed, the sea seems to have retired as the land gradually rose. Trees began to grow and a Forest Period was soon developed. But trees have an allotted span, and frequently die from accident—storm, lightning, and insect ravages. The trees of the forest fell, and stopped the natural surface drainage, and peat was formed, and the destruction of wide areas of woodland followed. Our forelder, Mesolithic man, may have given some aid in helping forward this work of destruction, but there is not a particle of evidence that he did, I believe. Again a slight downward movement of the land commenced. Salt water came in contact with the peat flora and killed it. Estuarine conditions again prevailed, and modern silt and warp were deposited as fast as the Fenland rivers supplied it. Still later in time, where the silt dipped into deep hollows from the unequal shrinkage of the lower peat—which was some-

times thick and sometimes shallow according to the irregularity of the surface on which it was formed—a second bed of surface peat was formed above the silt. Many beds of peat can be found in one place or another—as many as seven at different levels in a wide area with silt between them—showing great changes of circumstances, the salt water gaining at one time and the fresh holding possession at another. Speaking generally, however, we may say there are but two beds of peat—the one lying on the gravel or sand about the Boulder Clay, and that which lies on the surface of the silt. Those beds which are included within the silt are only limited in area, and may be said to arise from local rather than general causes. The two general beds may be called the old peat, and the modern or surface peat. When the sea water breaks into a peat level, the flora is killed at once and decay follows, unless it is stopped by silt being deposited so as to exclude the air.

How peat is most quickly formed can easily be explained, and kindly note the dates of my illustration. In 1651 the Earl of Cromarty went to a plain about half a mile round, in the parish of Lochbroom, high above the sea level. Here he found a dead wood of Fir trees, which had died of age. In 1666 he visited the spot again, 'and he could not see so much as a tree, but in the place thereof the whole bounds where the wood had stood was covered with green Moss (*Sphagnum*). They said none could pass over because the scurf of the bog would not support them. I must needs try it, and fell in to the armpits, but was immediately pulled out.' Before the year 1699 the whole forest place was turned into a common moss, and the Earl saw the country people digging turf and peat for firing. In less than fifty years from a dead wood a usable turbary was formed. This illustration explains at once the relation of trees to peat, which many people find so difficult to understand, and why carr-wood is so frequently found in them. Treeless peat is quite unknown in Lincolnshire, I believe. A tree falls and stops the natural escape of the drainage. The stagnant water kills the surrounding trees, a sou'-wester levels their trunks. These conditions are just what the Bog Mosses require to flourish with luxuriance. *Sphagnum*, the true Bog Moss of the north, is more or less rare in the Lincolnshire peat. With us its place is taken by another water Moss, *Hypnum fluitans*. It is an easy matter to show the varying age of the peat from the engulfed trees. From the two beds in Lincolnshire we can obtain the following species :—Oak, Scotch Fir, Yew, Alder, Beech, Hazel, Goat Willow, Creeping

Willow, Reed, and the whole family of fen plants from the White Water Lily to the smaller species of Chara. From the upper bed only:—The Elm (*Ulmus montana*), Ash, and Holly. From the lowest level of the lower bed the Dwarf Birch only, for the Arctic Willow (*Salix polaris*) has not yet been discovered in Lincolnshire. Thus the great Fenland supplies us with the fullest and most valuable evidence as to the antiquity of our forest trees; nay more, that they loved the same class of soils then that they prefer to-day. For instance, the Yew and Holly are generally found on gravelly soils. The insects, fish, birds, and mammals of the peat prove in other ways exactly what might be expected under the circumstances of the case, but I cannot give you instances to-night.

As the under peat comes to the surface as a fringe along the Witham and to the W. and S. of the Fenland it is very difficult to keep the beds quite distinct, but where the silt lies between them there is no difficulty. The upper or modern bed and the lower where there is no silt contain late flint implements and signs of Roman occupation, and may date back for 100 to 2,500 years, as the case may be, but can hardly be earlier, from the rate at which the silt has been deposited, and the position in which the beds are found in respect to it. The lower peat must have ceased growing at the time the brackish water of the Wash began to deposit the silt, so we can easily assign an approximate date to the period at which the lower peat bed ceased to be formed. Some idea of the rate at which the silt deposits have taken place above it may be gathered, as my friend Mr. Wheeler has pointed out, from what is now going on and from the area of the land which has been recovered from the sea during the last sixteen centuries, for there is no reason to suppose the rate has ever fluctuated much either way. The greatest accretion of land from silting up has taken place at the head of the old Roman bay at Briker Haven, in South Lincolnshire. Here successive enclosures have taken place from time to time, until the bank made by the Romans at Holbeach, for the protection of their corn land from the sea, is left from three to four miles inland. Now granting, which cannot be disputed, that these banks were made from 1,500 to 1,600 years ago, and setting the present rate of growth at from about 9 feet to 10 feet a year; allowing the same rate of accretion in past ages as we find at present, it would take 13,000 to 15,000 years for the formation of the alluvial deposits of the present Fenland above the lower peat stratum. When trees are

only found in the upper peat bed they may be called modern, for they can only have been with us from 100 to 2,500 years, and may have come with the Romans. But when they are found in both beds, above and below the alluvial deposits, they have been growing and seeding in Lincolnshire from 13,000 to 15,000 years.

Peat bogs have been known to swallow up men and animals and to preserve them for ages by making the skin tough, and in a manner to tan it. A great number of animal and other matters have been found in a wonderful state of preservation in this county during the last 300 years. In June 1747, in a peat bog in the Isle of Axholme, the body of a woman was found six feet below the surface. Her hair and nails were unaltered, and her skin was tanned and remained soft, strong, and pliable. From the antique sandals on her feet she appeared to 'that ingenious artist and skilful antiquary, Mr. George Ventur, that the body could not be earlier than Edward I. or Henry III.' If Ventur's opinion is correct we arrive at the date of the deposit of the woman's body in the peat.*

In the Oak forests of the old peat Squirrels lived and piled their store of Hazel nuts for winter food, Bees collected honey from the fragrant flowers of the Deer-haunted glades. The Marten Cat caught birds in the trees, and the Fox, Wild Dog, and Bear found a congenial home in the denser thickets. The Wild Boar and four species of Deer were rangers of the woods and shared the pastures with two breeds of Oxen. Pike and other fish lived in the pools, which were also the home of the Otter and Beaver, while Swans and other birds too numerous to name visited the lakelets, and the Herons hunted the reedy shallows as they do to-day. Later on came man! First, he who worked the paleoliths and mesoliths, later still the man who chipped the earlier neoliths, and still later the pygmy man, and lastly the ground stone man of the polished and drilled neoliths. Perhaps I had better add also that after the stone age came the copper man, not represented in the Fenland, then the bronze and iron men, and, finally, our own time of steel and claptrap. The dug- or burnt-out oaken boats of the ancient Britons were caulked with Mosses which are now growing with us, as they hunted the wild fowl or caught the fish which still

* See Phil. Trans., 1747, p. 571. While I was lecturing, the President (Marten Perry, M.D.) of Spalding Gentleman's Society, placed the original sandal on the table, which I had no idea was in existence. It has been in the society's possession ever since. It is figured in the Phil. Trans. (1747) and in the minute book of the Spalding Gentleman's Society of that date.

frequent the marsh waters. Over the whole of the 'Black Land' which fringes the alluvium, and which indicates the spot where the lower peat bed comes to the surface, hundreds of Oak trees lie buried in the peat along with their ancient flora, or are found rotting into slow decay by the borders of arable fields, or as gate posts, stack props, etc., or are used as fuel where they are dug out. They are exactly the same species as those in the woods and fox covers on the 'topland' near at hand.

Along with the peat in some places there is found another deposit in the great Fenland—I mean the Shell Marl. As far as I remember it has not been observed in the portion of the great Fen in this county. It is interesting, however, to us because it is being formed to-day in a little bit of boggy ground at Aylesby, near Grimsby. The Shell Marl is seen best at Whittlesey, Trundle, and Dray Meres, and Walpole Pit, not very far to the south of Spalding, in Huntingdonshire. It is a residual deposit of vegetable decay in pure limewater; I might almost say cumulose like the peat by which it is surrounded, only the humus of the plants has been removed. It is a purely sedentary accumulation, and thus widely different from the alluvial silt which has been transported by river and estuarine action from the vast watersheds of the Fen's rivers past and present. The flora of the Shell Marl is simplicity itself—it consists of Characeæ and nothing else. I believe that two species only have been detected in it, or as natives of the neighbourhood where it flourished formerly, namely, *Chara fœtida* and *C. hispida*. Its Mollusca are the following purely freshwater species:—*Bithinia tentaculata, Limnæa auricularia, L. peregra, L. stagnalis, Planorbis umbilicatus, Pl. spirorbis, Succinea putris, Sphærium corneum, Pisidium amnicum.*

Why it is so restricted in area is rather a difficult matter to settle, or I should say was, before spots where a similar deposit is forming at the present time were discovered. The insuperable difficulty of finding fitting causes and circumstances can be explained by like surroundings in another locality. In Aylesby Bog, which is of most limited extent by the Beck of the same name, south of Great Cotes parish, are a number of 'Blow Wells,' in which marl of the same nature is being formed and deposited annually. The conditions in and around these Blow Wells are as follows:—

1.—The water is perfectly pure and fully charged with carbonate of lime from having filtered through the chalk, which lies immediately below the Boulder Clay on which the bog lies.

1902 June 1.

2.—The springs which supply this water are most powerful. The driest summer does not affect the supply.

3.—These wells are deep circular ponds in the peat as a rule. If the water is only deep enough they are covered with nothing but *Chara hispida* in large masses from being too deep for other vegetation.

4.—The excess of carbonate of lime has aided in the gradual destruction and removal of the peat which once occupied the site of these wells.

5.—The ordinary peat growth flora flourishes round the edge of these wells, and molluscs and fish are found in them.

The only fish I have personally observed were the Common Trout and Three-spined Stickleback. The shells were the same as in the southern Marl, but not as frequent as one would naturally have expected from a casual glance at the Shell Marl of Trundle Mere. When we reflect, however, that one season's deposit, say from six inches of matted *Chara hispida*, would only be a white stain or coat as of the thinnest paint, the relation of the shells to the inclosing marl is easily explained. *Chara fœtida* is found in the neighbourhood, but I could only detect *C. hispida* at Aylesby in the 'Blow Wells.' It is an annual, thickly coated with carbonate of lime, and flowers and fruits plentifully—if I may thus speak of a Cryptogam. Year by year the carbonate of lime which results from the decay of this species in the winter accumulates on the floor of the wells, and is gradually built up into a solid mass of marl like that found in the Whittlesey district.*

The marl of the Great Fenland attains its fullest development in Sedge Fen, near Cross Bank, in Huntingdonshire, to the south of us. There it is of a white friable nature, but is much decomposed by the operations of agriculture. The unweathered mass is jointed so as to form large lozenge-shaped lumps, and the main joints are very regular. Its boundaries, like those of the Fen beds generally, whether peat or silt, can only be approximately determined, as the deposit dies out with a 'feather edge.' We have only to suppose that strong springs from the underlying Oolitic Limestone supplied the clear and

* It is worth noting, perhaps, that these 'Blow Wells' never entirely freeze and coat with ice even in the most Arctic weather. In the summer of 1895, as the late J. Cordeaux and I examined one at Great Cotes, he said:—'They are never covered with ice—not even this spring. I shot a score of duck from this well this season when there was no other open water except these Blow Wells in North Lincolnshire.' It is strange under the circumstances that no bones of the Anseres have been obtained from the Shell Marl. They have been found in the peat.

highly-charged waters to a flat but fairly deep saucer lake in the peat, lying about the Boulder Clay, to have all the circumstances which are required for the formation of Shell Marl. I have kept you rather long over this matter, for the 'Chalk Marl,' as it is locally called, proves a very valuable dressing for peat and silt either in the raw state or burnt. It contains 65 per cent. of pure carbonate of lime. Kiln lime can be bought with a much higher percentage, as high as 95, but a specialist alone knows where to obtain it.

The silt of the Fenland, which varies in depth from 8 to 18 feet, is particularly interesting to field-geologists, for it is an estuarine formation which we can observe being made to-day by the joint action of fresh and salt water.*

Against a natural bank of peat, or one raised by man on the foreshore, first sand, and then fine silty sand brought down by the Fenland rivers is cast up by the sea, the lighter particles of the sand—locally called 'warp'—being carried away by the wash of the waves. When the bank is from 14 to 15 feet above low water mark, Marsh Samphire (*Salicornia herbacea*) begins to grow, when the surface is just covered at neap-tides. It disappears again when the level of the soil is 16 feet above low water mark, or two feet above ordinary spring tides. The Samphire from this point is gradually replaced by grass. Now both the Samphire and grasses act as a strainer for the muddy tidal water, and gradually filter out the fine silt or warp to a higher and yet higher level. At last only the highest spring tides can fully cover the marsh which is formed. Old high marsh is 20·47 feet above low water, and an ordinary spring tide only 0·19 feet higher. My friend, Mr. W. H. Wheeler, M.Inst.C.E., of Boston, is the greatest living authority on silt and warp formation.† He

* This is easily proved by its molluscan and mammalian fauna, which is as follows:—Mollusca, *Cardium edule, Mytilus edulis, Ostrea edulis, Pisidium amnicum, Scrobicularia piperata, Bithinia tentaculata, Helix pulchella, Hydrobia ulvæ, Limnæa peregra, L. stagnalis, Planorbis carinatus, P. complanatus, P. lævis, P. vortex, Physa fontinalis,* and *Valvata cristata.* The Mammalia are as follows:—*Balæna mysticetus, Delphinus tursio, Orca gladiator, Phoca vitulina, Phocæna crassidens,* and *Trichecus rosmarus.* If this is not an estuarine list, what would be?

† When fine sand is mixed with a sufficient amount of chalk or clay detritus to give the particles a certain amount of adherence, the mixture is termed silt in this lecture. The warp, on the other hand, consists of finer particles than those of which silt is composed. When the size of the particles suspended in water is so small as to be from $\frac{1}{500}$ to $\frac{1}{1000}$ of an inch down to sizes so minute as not to be counted except by the aid of a powerful microscope, they constitute the richest kind of 'warp' or fine alluvium. When settled on the seabed this material is known as ooze. See Wheeler's 'The Sea-Coast,' London, 1902, pp. 57-62, and his Brit. Assoc. Address (Glasgow), 1901.

made me a convert to the true theory of alluvium, i.e., silt and warp, and I advise you all to read his works. He points out with his usual practical knowledge that Samphire beds turn into coarse grass beds in about 10 years, but 20 to 30 should be allowed to pass over for the roots and decayed vegetable matter to fill the ground with those rich organic deposits which make the soil good. Moulton Marsh, inclosed in 1875, was 770 yards from the old bank to the sea after a growth of 38 years. In some parts of the foreshore the inclosures have followed too rapidly, carried on by men who did not understand silt formation. The ground in consequence is poor sandy loam instead of rich silt. As the Fen rivers supply the whole of the mud for the silt, and not the sea, enclosing good foreshore can only go on at a certain fixed rate.

Time is slipping away, and I can only just refer to the proverbial richness of the Fen soils, which can grow such crops as this county cannot equal except on similar soils. The pastures of the silt are unequalled, and the celery of the peat require some beating when size is considered. The potatoes of the silt may be set against the mangolds of the peat. Both these soils, which are good enough for Sheep in summer, are but poor winter ground. One turnip grown on chalk or Lincolnshire limestone has as much food in it as two grown on peat. Now a peat soil is five times richer in nitrogen than either of the soils from the rocks just named—ten times richer than a badly-farmed limy soil—the best dressing then for peat is either of these rocks. I always advise that pure chalk or limestone rock should be broken up about the size of road metal, and should be applied to peat as heavily as the pocket will allow. One benefit of this dressing is it lasts a lifetime if it is once well done.

The silt requires lime in a more active state, and it should not be overdone, as is frequently the case. A young land agent, with more theory than practical experience, 'made a lot of lime,' and added it by tons per acre to a rich silty loam. The quicklime did its work effectually, and the barley crop was laid flat while in flower, and was totally ruined. For silt soils a five to ten cwt. per acre dressing of quicklime, applied as often as possible in autumn, followed by a spring dressing of good cake manure cannot be beaten by the finest artificials ever contrived. As this lime can be obtained for 14s. or 15s. a ton ready ground the cost is not out of the way. A manure drill is the best means of applying it. Time will not permit me to speak of the artificial

manures which are best for peat and silt according to the crop grown. This lecture must draw to a close. I am sure even the lady members of the Union who are present feel they have been silent long enough.

I should just like, however, to point out the double danger of powerful nitrate manures, and call on my friend, Mr. E. Wightman Bell, F.C.S., as a public analyst, to support my experiences gained during the last ten years. The function, first and only, of nitrogen is making plant growth. In the peat there is more than sufficient nitrogen as it decays under farming operations, and the silt is very rich in it. The difficulty of both soils is that available bases are scarce in proportion to their richness, therefore add lime in one form or another. If seed is the thing you are seeking, as in growing wheat, barley, and oats, avoid nitrogen manures altogether—lime and superphosphates are what you require. Use the latter as a starter and food for root crops, and for potatoes along with potash manures. One danger of using nitrogen manures, like nitrate of soda, is it kills off or stops the action for the time of the nutrifying soil bacteria, which are the farmers greatest friends. A dressing which in a wet season is safe simply ruins the crop in a dry one. Manuring on peat and silt should tend to make the seed finer and richer in quality—more like 'the topland growth.'

As I have named agricultural matters I should like to give voice to a practical piece of experience as well recognised by Fenland farmers as by other agriculturists. Formerly there were only two trades which a man could follow without any training or early practical experience—politics and preaching—but in these days others have been added to the list—agriculture notably being a case in point.

The farmer nowadays has too many friends and advisers, self-called to their useless undertaking. Most of them are as ignorant of the arts required by the practical farmer, who has to make his living, that is, to make his capital pay a good return, as they are of ordinary common sense. Their heads are as full of book learning as their mouths are of words. Leave book-learning and manuring severely alone in practical work when it relates to other parts of England or foreign lands. There is a better way than that of picking up experience. It is ever valuable in proportion to its cost, so let it cost somebody else something—as much as possible. Look over the ditches and dykes of your own broad Fenland, and watch the clever,

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pushing, contriving, and successful man. If he gets a useful hint, and makes the soil sing a prettier tune, you can easily follow in his footsteps and pick up a useful practice. The last methods of the successful man are new enough for the ordinary man. I see no end but the Bankruptcy Court for the man who listens to what everybody says and believes it, or who reads everything and practises it—changing his system of farming or manuring every season. The man who wants a round house when he lives in a square one, or a square abode if he occupies a round one, will neither square the circle nor his creditors. We find nowadays in everything our practical teachers were wrong—our forefathers on the soil. We hear that yard manure is a costly and useless product. It has been in use some thousands of years, and yet the late Sir John Lawes or someone only discovered its full defects the other day. Now, when all is said, good cake-fed 'yard muck' is the best soil dressing I know. It has one defect for 'top land,' you cannot get enough of it from the limited quantity of straw your soil grows. Firstly, it is the most natural manure there is, and, secondly, costs nothing except moving by manual labour and carriage, as it is a by-product of cattle raising and feeding. In all farming matters I go to the fields and practical farmer for information, and not to books. At best they can only tell you what to do; the practical man shows you how to do it! 'Men before books' is the safest farmers' motto I know.

Ladies and gentlemen, I have taken the liberty of addressing you on the Fenland Soils, because I love soils and soil questions as an agriculturist's son, sprung from a long race of farmers till the pedigree is lost in the mists of time, should love them. I never try to teach farmers, let me say, for I have discovered, after 20 years' experience, that the practical farmer has taught me all I know about soils and manures which is of the least value. Of course, there are farmers and farmers, as there are parsons and parsons! Some are good, some only moderately good. I have known parsons who could not say a word without their 'book,' but I hope farmers will never get into the same tight corner with their practical doings. I am speaking to two scientific societies this evening, and the Fenland Soils are our subject, and so farming and manuring come naturally under observation, or I should not have taken the liberty of speaking of manures, as I know there are more practical men than I am in the room, and it is a matter upon which practical men alone ought to speak or to be listened to.

LINCOLNSHIRE NATURALISTS AT SPALDING.

Rev. EDWARD ADRIAN WOODRUFFE PEACOCK, L.Th., F.L.S., F.G.S.,
Vicar of Cadney; Organising and Botanical Secretary, Lincolnshire Naturalists' Union.

The 32nd Field Meeting of the Union was held at Spalding, in the South-East of the County, on Friday and Saturday, 30th and 31st August 1901. The weather being dull and uncertain, only a little over twenty members foregathered for work. The President (the Rev. A. Thornley, F.L.S., F.E.S.) was there the whole time, but Messrs. F. M. Burton, F.L.S., F.G.S., and H. Preston, F.G.S., could only remain for the 30th. A fair day's work was done at Crowland by the party, which drove out in two brakes, on Friday, and still better results followed the morning spent at Surfleet, where the rivers Glen and Welland join, and again round Spalding itself on the Saturday afternoon.

Spalding town stands on the silt of the Fenland, and nothing but pure alluvium stretches for miles. Crowland, on the other hand, is built on a spit of Old River gravel which runs in a north-easterly direction from the long mass of Old Beach gravel which lies on the west of the Fenland. As more will be said about the matter later nothing further need be written here. It has been pointed out before that the past and present geological evidence, shading into our existing fauna and flora, is what we find in the Great Fenland deposits, which are wholly Quaternary.

Miss S. C. Stow and Mr. J. S. Sneath supplied lists of plants. The most noticeable characteristic of the flora was the number of aliens.

The best things at Spalding were:—*Althæa officinalis, Trifolium fragiferum, Lotus uliginosus, Volvulus sepium, Marrubium, Hydrocharis, Sparganium simplex.* Crowland was rich, too, and its best species were *Epilobium montanum, Œnanthe Phellandrium, Peucedanum sativum, Eupatorium, Bidens tripartita, Symphytum officinale, Scrophularia nodosa, Stachys palustris, Asplenium Ruta-muraria.* Pinchbeck supplied *Chelidonium, Cochlearia Armoracia, Impatiens Noli-me-tangere,* and *Lycium.* The last is found as an escape round many of the villages of this district as it is in many other parts of the county. Surfleet was productive too:—*Buda marina, B. media, Melilotus officinalis, Hippuris, Aster Tripolium, Glaux, Lycium, Samolus, Plantago maritima,* and *P. coronopus.* The rare silt *Juncus compressus,* and the hitherto unrecorded *Alopecurus pronus* Mitt.

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Miss S. C. Stow writes that the Moss list contains 16 species, and she believes that a longer search would have proved the district not a bad one at a better season of the year.

Crowland Abbey, Div. 16 :—

Brachythecium rutabulum B.&S.

Surfleet, Div. 17 :—

Grimmia pulvinata Sm.
Pottia truncatula Ldb.
Tortula muralis Hedw.
Barbula fallax Hedw.
Barbula unguiculata Hedw.
Bryum pseudo-triquetrum Schwg.
Mnium undulatum L.
Brachythecium albicans B.&S.
Amblystegium serpens B.&S.
Hypnum riparium L.
Hypnum cuspidatum L.

Spalding, Div. 18:—

Bryum argenteum L.
Fontinalis antipyretica L.
Brachythecium rutabulum B.&S.
Eurhynchium prælongum B.&S.
Hypnum riparium L.
and var. longifolium Schp.
Hypnum cuspidatum L.

The President reported shortly on the Insecta as follows :— A great deal of time was spent in visiting the fine old Abbey, and very little remained over for entomological work. Friday, too, was rather a windy day, which, in so flat a country, militates much against success in finding insects. However, an interesting Saw-fly, *Allantus scrophulariæ,* turned up at *Scrophularia aquatica.* There seems little doubt that this harmless and pretty insect is a mimic of *Vespa sylvestris,* which visits and pollinates the same plant. The other insects just worth mentioning were :—*Stenobothrus bicolor,* a very common Grasshopper, and that common Bug, *Nabis limbatus.* At Surfleet, a very promising locality, visited on Saturday morning, the following common Beetles were taken :—

Calathus melanocephalus.
Calathus cisteloides.
Ocypus morio.
Bledius spectabilis.

At Crowland half-an-hour was given to the Land and Freshwater Mollusca, but as the drains had recently been cleaned out they were spoiled for the time being. Messrs. Burton, Thornley, and I managed to find the following :—

Arion ater.
Arion hortensis.
Agriolimax agrestis.
Hyalinia cellaria.
Helix hortensis var. lutea.
Helix caperata.
Helix virgata et var. obliterata.
Planorbis corneus (young).
Planorbis vortex.
Planorbis spirorbis.
Planorbis carinatus
et var. albida.
Physa fontinalis.
Limnæa palustris.
Limnæa peregra.
Vivipara contecta.
Both the Bythiniæ, and
Valvata piscinalis.

Miss S. C. Stow writes that she noticed a great number of Frogs and Toads on Saturday afternoon at Spalding; one Copper Butterfly (*Chrysophanus phlæas*); and a lot of Whirly-gig Beetles (*Gyrinus natator*) in the dykes; and another species, *Haliplus lineatocollis,* she found among moss after she returned home.

The Gentlemen's Society of Spalding, the oldest antiquarian society in England, gave a hearty welcome to the Union, and threw open its meeting-room and extensive collections, to which the members adjourned after the usual high tea. At 8 p.m. on the Friday evening the Organising Secretary, who is a honorary member of the Spalding Gentlemen's Society, gave an extempore lecture from diagrams and maps on 'The Fenland Soils.'* A hearty vote of thanks was proposed by Mr. William Caulton, one of the most mentally youthful if aged members of the Gentlemen's Society, and seconded by the President in the name of the Union. After a few words from Dr. Marten Perry, President of the Spalding Society, on the pleasure the visit of the Union had given him personally as well as to the other members of the Society, the meeting broke up for the night.

* The paper is printed in this number of 'The Naturalist,' pp. 177-188.

NOTE on LINCOLNSHIRE PLACE-NAMES.

Natural History in Local Place-names.—I ought to preface these remarks by saying that philology is a dangerous thing to play with unless one is 'experienced.' Place-names have a curious history of their own, and not infrequently reflect a little local characteristic natural history, now long since a thing of the past. For instance, my own parish, Cadney, which in Domesday Book is written Catenai, may be derived from the old Norse Köttr, a Cat, Marten-Cat, Polecat, or Weasel. Cadney would thus be the cat-island, as Gedney (D.B. Gadenai from O.N. gaddr) is pike-island. Howsham, which is still called 'ousham by the natives, and in D.B. Vsum, admits of a still simpler derivation. Ouse-ham equalling 'water-village.' Both these names are easily explained when their former surroundings are observed. The forests which extended over the carrs were vast enough, as the Oak and Yew trees buried in the peat prove, for any number of Cats, be they wild, Marten, or Pole. The latter flourishes in the parish to-day. Newstead-on-Ancholme, a farm and parish, for ecclesiastical purposes joined to Cadney, is the 'new standing or building.' Farmstead and our local gatestead are similar words. I name this place because in the charter of Henry II., A.D. 1171, founding the religious house, the spot is called Rucholm. This looks most uncommonly like the Anglo-Saxon Hroc, a Rook; and there has been a rookery on the holme or island from an unknown date. The name is particularly interesting, as 'the Rook' is universally called 'the Crow' in this part of England. The river on which Newstead stands was once known as the 'Auk,' a word of Celtic origin, signifying 'water.' Compare the 'Ax' of the Isle of Axholme. It seems to have picked up the 'holme' from an island called 'Ancholme,' formerly in South Kelsey carrs.—E. Adrian Woodruffe-Peacock, Cadney, Brigg, 2nd May 1902.

NOTES on YORKSHIRE BIRDS.

Nightingales at Knaresborough.—A pair of Nightingales have this year taken up their abode upon the banks of the Nidd, between the Low Bridge and Grimbald Bridge. A pair appeared almost in the exact place some years ago. The natives are nightly being delighted with the song, which is very fine. What can have induced them to penetrate so far north during such a cold spring?—R. FORTUNE, Harrogate, 12th May 1902.

Black-headed Gull Nesting in North Yorkshire in 1702.—The second volume of the new series of the 'Cumberland and Westmorland Antiq. and Archæological Society' appeared early in May, and contains a further portion of Bishop Nicolson's Diaries. On 13th May 1702, Nicolson was elected Bishop of Carlisle. On the 15th he was on his way to York, and at Nunnery on the 22nd May, via Brough to Greta Bridge. On 23rd May 'Baited at Butcher Houses . . . About a mile and a half short of Thornton Bridge thousands of the Blackcap-Mews breeding on a moss.' This, I suppose, would be the Black-headed Gull (*Larus ridibundus* L.)?

It is to be hoped the Bishop of Barrow will collect the natural history notes in these diaries, for they affect more county lists than one.—S. L. PETTY, Ulverston, 20th May 1902.

Increase of the Great Spotted Woodpecker in the Wilsden District.—It is very gratifying to find that the Great Spotted Woodpecker (*Dendrocopus major*) is on the increase in this district. In one familiar wood where a few years ago one pair used to breed, there are now several. On the other hand, the Green Woodpecker (*Gecinus viridis*) appears to have diminished. The Lesser Spotted Woodpecker (*D. minor*) occasionally visits here, but I have never known it to breed. I observed a Great Spotted Woodpecker in a wood adjoining Chellow Dean reservoir, close to the city of Bradford, during March. One would be inclined to think in this timber-felling age the Woodpeckers would be the first to feel the pinch of want, and it is very pleasing to know that they still hold their own.—ROSSE BUTTERFIELD, Wilsden, 28th April 1902.

Migratory Note on the Pied Flycatcher and Chiffchaff in West Yorkshire.—A male Pied Flycatcher (*Ficedula atricapilla*) was observed on 16th April by my father, working its way up one of the main tributaries of the river Aire in this district. This is an exceptionally early date for the appearance of this species in these parts. Three years ago I saw a male in almost exactly the same place on the 28th April, and regarded that at the time as early. But it is not the early appearance of this charming little bird that I want to emphasise, but the phenomenon of the Pied Flycatcher and also the Chiffchaff (*Phylloscopus minor*) periodically appearing on their spring migration in this particular valley without regularly staying to breed, it being apparently suitable for both species.

I know of but one instance on record of the Pied Flycatcher actually breeding, another in which a pair commenced to nest but was eventually abandoned, and of the Chiffchaff there is no authentic record.

The valley included—from the source of the tributary to its junction at the Aire near Bingley—is perfectly familiar to both my father and myself, and it seems scarcely probable that such obvious birds could be overlooked year after year; therefore you are bound to infer that this is merely part of their migration route, and that they cross over elsewhere to their ultimate destination. Needless to say both species are generally observed on trees abutting the stream, such as Alders and Willows, when in the early spring insect life is abundant.

I visited the breeding haunts of the Pied Flycatcher in Wharfedale on 26th April, yet strange to say I did not see an example, though as my time was limited it may be they were overlooked.

Formerly this species was considered somewhat rare and local, but my experience, both in Yorkshire and elsewhere, is that it by no means merits the term 'rare' in suitable localities.—ROSSE BUTTERFIELD, Wilsden, Bradford, 28th April 1902.

LEPIDOPTERA IN KENSINGTON ROAD, MIDDLESBROUGH, DURING THE YEARS 1898-1900.

FRANK ELGEE,
Middlesbrough.

Kensington Road is situated opposite the main Linthorpe Road entrance to the Albert Park, Middlesbrough, and runs due west for several hundred yards. It consists of a single row of newly-built houses, on the north side only. On the south side are fields and market gardens, separated by Hawthorn hedges with occasional Ash trees. These fields are enclosed from the road by a long row of tarred palings, whilst higher up was a small Hawthorn hedge (now destroyed), which overlooked towards the north a fairly large open grass space, formerly called the 'Dandies,' but now built upon. Half-way up Kensington Road, on the south side, is an old red-tiled farmstead (one of the last bits of rustic Middlesbrough) named Old Gate, together with an orchard containing a few Apple trees. On the east side of the farm, within the 'fence' is a pond with an odd Willow growing on the bank. A quarter-of-a-mile or less to the south begins the extensive suburb of Linthorpe; not a mile to the north-west are the Newport Ironworks, whilst towards the west is the Workhouse, etc., and in the south-west the open country. Such is a brief description of the collecting-ground of the town entomologist!

It will be noticed that to a certain extent the conditions were favourable for the appearance of a few moths, but not to the extent that was realised. I believe the idea of sugaring the tarred palings and along the old hedge originated with Mr. Sachse in the fine autumn of 1898, when lepidopterous insects were very abundant. The operations were continued in 1899 with great success, and again in 1900. But by that time the road had increased to such an extent, and, passers-by becoming much more frequent, we were compelled to desist, with regret, for, excepting the hedge, the 'fence' still stands and might have produced other species.

From the list given below it will be seen that a total of 81 species were observed, which I consider an excellent number for such a locality. One of the species taken has only a few localities recorded for it in Yorkshire, viz.:—*Epunda lutulenta*; this was perhaps the best capture. *Aplecta occulta* makes a good second.

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I may here mention that by extending the field of operations to the Park the following further species of 'town' insects could have been added:—*Trochilium crabroniforme, Dicranura furcula, Pygæra bucephala, Notodonta ziczac, N. dromedarius, N. dictæa, Amphidasis betularia,* etc., but I reserve particulars for a future paper.

A fine male *Dicranura vinula* occurred on the Newport Ironworks in June 1900, possibly attracted by light, though this seems doubtful, as the insect was in splendid condition. Specimens also of *Macroglossa stellatarum* have been taken at the electric lights of the North Eastern Steel Works.

LIST OF SPECIES.

RHOPALOCERA.

Pieris brassicæ. Common.

Pieris rapæ. Common.

Pieris napi. Several.

Vanessa urticæ. One or two.

Vanessa atalanta. One, 3rd October 1900.

Vanessa cardui. One, taken by Mr. Sachse in a kitchen in September 1896.

HETEROCERA.

Acherontia atropos. Larva on potatoes, 12th October 1898, by Mr. Sachse.

Smerinthus populi. ♀ on 26th June 1900.

Spilosoma menthastri. One imago and several larvæ on horse-radish, 1900.

Hepialus lupulinus. Several on 'Dandies.'

Hepialus humuli. A few on 'Dandies.'

Cilix glaucata. One at sugar, 20th June 1900.

Rumia luteolata. Several.

Acidalia bisetata. One at sugar, June 1900.

Hybernia marginaria. Several, April 1900. The majority of these specimens were normal, only one or two being slightly darker than the type.

Eupithecia vulgata. One, 18th June 1900.

Melanippe fluctuata. Several.

Cidaria testata. One at sugar, 3rd September 1900.

Acronycta psi. Several; also on Linthorpe Road. All normal forms.

Acronycta rumicis. A few.

Leucania lithargyria. One, 17th July 1900.
Leucania comma. A few.
Leucania impura. A few.
Hydræcia nictitans. Several.
Hydræcia micacea. Several.
Xylophasia rurea. A few ; also two or three var. *alopecurus.*
Xylophasia lithoxylea. Two.
Xylophasia monoglypha. Numerous ; and var. *infuscata* in 1899.
Luperina testacea. Numerous.
Mamestra brassicæ. Abundant.
Apamea basilinea. Numerous.
Apamea gemina. Several.
Apamea didyma. Common, with many nice varieties.
Miana strigilis. Abundant ; and var. *æthiops.*
Miana fasciuncula. Common and very variable.
Miana literosa. Numerous.
Miana arcuosa. One or two.
Caradrina quadripunctata. Numerous.
Caradrina morpheus. Several.
Agrotis suffusa. Numerous.
Agrotis saucia. A few.
Agrotis obscura. One on 16th September 1898 (Mr. Sachse).
Agrotis segetum. Very common.
Agrotis exclamationis. Very common.
Agrotis nigricans. Numerous.
Triphæna comes. Several.
Triphæna pronuba. Very common.
Noctua glareosa. One on 24th August 1900.
Noctua plecta. Several.
Noctua c-nigrum. One on 8th October 1900.
Noctua xanthographa. Common.
Tæniocampa gothica. A few.
Tæniocampa incerta. A few.
Tæniocampa stabilis. One or two (Mr. Sachse).
Orthosia lota. A few very small specimens.
Anchocelis pistacina. Several.
Anchocelis litura. Numerous.

Cerastis spadicea. Numerous.

Cerastis vaccinii. One.

Scopelosoma satellitia. One, 1st November 1900.

Xanthia circellaris. Numerous.

Polia chi. Several, all normal; one fine var. *olivacea* on 24th August 1900.

Polia flavicincta. Three; two on 28th September 1898, one on 17th September 1900.

Epunda lutulenta. Half-a-dozen.

Miselia oxyacanthæ. Numerous.

Phlogophora meticulosa. Numerous.

Aplecta occulta. One in 1900 (Mr. Sachse).

Hadena dentina. Two in June 1900.

Hadena dissimilis. Two in June 1900.

Hadena oleracea. Abundant.

Hadena pisi. A few.

Hadena thalassina. Several.

Calocampa vetusta. One, April 1899 (Mr. Sachse).

Calocampa exoleta. Abundant.

Cucullia umbratica. One in 1897; one also in 1900 on Linthorpe Road.

Plusia gamma. One in 1900.

Gonoptera libatrix. Three or four.

Amphipyra tragopogonis. Abundant.

Mania typica. Numerous.

Mania maura. One (Mr. Sachse).

Pyralis farinalis. Two.

No doubt the majority of the species mentioned in the preceding list are common ones. But my chief reason for writing this article has been to place on record the lepidoptera taken in Middlesbrough, both on account of the nature of the locality and of it soon becoming destroyed. We should, however, always bear in mind that the common and often despised species are those which have been successful (very much so with some!) in the great struggle for life. Rare species, being usually on the verge of extinction, are to be regarded more as failures in the light of natural selection than otherwise.

In conclusion, it is obvious that all the natural objects to be met with in an ordinary street of a smoky twentieth-century town will provide us with enough scientific biological study to last a life-time.

Naturalist.

THE BIRDS OF NORTH-WEST LINDSEY.

MAX PEACOCK.
Cadney, Brigg, Lincolnshire.

PART I.

This list is no attempt to 're-do' the late John Cordeaux's life-work; I have too much respect for his memory to attempt anything of the kind. It is, on the other hand, an effort to make notes, as far as possible, as complete for North-West as Mr. Cordeaux did for North-East Lindsey. I do not claim to be a trained ornithologist in the modern sense, and have never possessed a typical collection of skins to help me. My only books have been Bewick, Morris, Cordeaux, and Saunders. For many years I have made irregular and very casual jottings of what I have observed, and this list is the result, thanks to the very considerable help of other workers, whose notes have been added. I believe that these pages will fairly outline the birds which attempt to breed with us, though, speaking generally, they badly represent the frequency of the rarer immigrants occasionally visiting us in the spring and autumn, and the casual Falconidæ, apparently following them north or south in their flight. The list of warblers is far from perfect. During the last twenty-five years I have seen a number of species I could not identify, and, on account of their rarity, could not find it in my heart to shoot them.

The valley of the Trent, lying north and south in West Lincolnshire, is a great migration road for inland birds, more especially in rough spring and autumn weather. The Lower Liassic hill, running with a steep escarpment close to and parallel with the river, forms a natural barrier of protection in north-east and east gales. Storm-driven species of coast and deep-sea genera may at times be found sheltering in the river when rough weather has lasted some days. My brother Adrian, 'the Vicar' of the notes, who lived on that part of the Trent bank for some years, noticed from 1876 to 1883 that when the Trent from Auckborough to Crosby was full of 'strange birds and wild calls,' that the Little Auk, Storm Petrel, or other deep-sea fowl were sure to be reported from more distant inland localities. There were notable storms in January 1887 and November 1896, in which the Herring Gull, Black-backed Gull, Kittiwake, and Common Gull, as well as the birds named above, were all driven inland. Mr. Cordeaux told the Vicar on the last

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occasion he had 'scores of records for the Little Auk, both from within and far more inland than the Humber District.' At one time or another the Vicar or I have seen quite thirty different species sheltering in the river we could not name in their then plumage. A gale from the south-west, which is much more frequent than from the north-east, if it only blows long enough, brings the birds inland too. This is the case specially in the autumn, but they do not then cling to the river Trent so much as lie up on our inland waters, flashes, and warping flats. A third cause which brings us rare visitors is a mighty frost or 'long blast' as we call them locally. When the river Trent is frozen over as far north as Amcott's Hook, and the sea and Humber foreshore covered with ice both at high and low water, the Trent just below the permanent ice-band is generally full of deep-sea fowl hunting for food. These frosts during my memory have always come from the south-west; the great one of 1895 was no exception. As far as my observation goes, it is not the cold or roughness of these storms which drives the birds ashore, so much as the failure of their food supply. If a bird is shot as soon as it arrives in the river its gizzard is empty. There is yet another reason why this list is not so perfect as it should be. When the rarest birds are driven into the Trent, or are sheltering in cross-drains, reedy becks, or ponds, no living man could take delight in observing them, if he can get into a snug berth away from the driving sleet or cutting wind.

Want of type specimens, and a fuller knowledge of the sea and shore fowl in the changing forms of their youthful, summer or winter dress would cause the best of men to hesitate in naming a species for certain seen by the naked eye, or through a rain-lashed field-glass, to say nothing of one who is conscious of many defects as an observer and learner.

These notes refer to a definite locality and its district, of which my home parish, Bottesford, may be called the centre. Divisions 1, 2, 3 S.W., 5 and 7 N., of the Lincolnshire Natural History Map, is the portion of North-West Lindsey I know with a life-long experience. A line drawn from the river Trent south of Gainsborough and Lea through Market Rasen to the Wold escarpment marks off my country distinctly. It contains the northern portions of the Trent and Ancholme rivers. The rocks are Keuper, Rhætic, Lias, and Oolite, overlaid in places by boulder clay, gravels, water-carried or blown sand, silt, peat, and Humber alluvium or warp. It is a district rich in water and woodlands, sandy commons and peaty bogs; and a hundred

years ago must have been an ideal home for a naturalist and sportsman. By the Manby Woodlands I mean the stretch of sandy limestone covers from Appleby on the north to Manton Common on the south. They have been in existence in one shape or another for ages, as the old oaks near Manby Hall show.

The Rev. H. C. Brewster, B.A., most kindly supplied me with the South Kelsey notes. Mr. J. J. Baldwin Young, M.B.O.U., was equally good-natured for the Claxby and Market Rasen neighbourhood. Mr. F. M. Burton, F.L.S., F.G.S., acted the Good Samaritan for Gainsborough; and my friend Mr. George Hunsley supplied a number for Kirton-in-Lindsey. When I do not add the division numbers it is to be understood that the bird is found in all of them. I quote the late John Cordeaux's two works, the 'Humber District Birds,' 1872, and the 'Humber District Bird Pamphlet,' 1899, as 'Cordeaux, 1872' or '1899,' as the case may be. All other references I print in full. My cases of stuffed skins and collection of eggs have been sold some time now, but could be traced, if required, I have no doubt. At the end of this paper I hope to publish a list of the dialect names for our local birds; here I follow the English and scientific nomenclature of the second edition of Saunders' 'Manual,' 1899.

Mistle-Thrush. ***Turdus viscivorus*** Linn. Common. It builds year after year in the same spot; in one case for thirteen years continuously. The suitability of the place was the attraction. In another case it was the same tree, but never the same exact position for years.

Song-Thrush. ***Turdus musicus*** Linn. Common. One nested between the spokes of a cart wheel, which had been left ten days in a distant field. A hen bird was found by the fish-pond at Bottesford Moors after I cleaned it out, 13th June 1893, with its head trapped in the shell of the Great Fresh-water Mussel (*Anodonta cygnea* Linn.), which abounds there. It was dead, and had laid an egg. A nest, with a pure white egg and three others of the natural colour, 22nd May 1894.

Redwing. ***Turdus iliacus*** Linn. Common every winter. They die by hundreds in a long frost and snowstorm.

Fieldfare. ***Turdus pilaris*** Linn. Common in the winter. While out Woodpigeon shooting during the Christmas holiday of 1873 or 1874, the Vicar fired at a flight of Field-

fares to empty his gun as we were leaving the Snake Plantation in the winter's twilight. One bird fell, and we took off its skin and had it for years, believing the specimen to be a melanistic Fieldfare. My brother now believes it was the Black-throated Thrush (*T. atrigularis* Temminck) of Siberia. I have not seen this species, and still believe it was an unusual Fieldfare off-type in colour. It had a very dark head, wings, and tail, a black throat, and very light grey breast and under-parts. The matter must ever remain uncertain, as the skin was destroyed by moth long ago.

Blackbird. ***Turdus merula*** Linn. Common. Two most beautifully-pied specimens in full breeding plumage were shot by Charles Todd at Yaddlethorpe about 1866. I once found an egg of this species, with three other eggs of the normal shape, no bigger than a French Bean (*Phaseolus vulgaris* Linn.), and almost exactly its shape. It was very flat on two sides.

Ring-Ouzel. ***Turdus torquatus*** Linn. Is seen at times in spring and autumn. We caught one while taking Goldfinches in a trap cage in Bottesford Manor garden in the early autumn, 1872. It has bred near Gainsborough and in Greyingham Gorse, Div. 5. Saw one bird, 5th June 1890, at Bottesford. My last date before that was 3rd Sept. 1887, when two were observed. Mr. Brewster says, 'Appears at South Kelsey in the spring, but does not stay.'

Wheatear. ***Saxicola œnanthe*** (Linn.). Found on our sandy commons. It bred with us in three spots in 1894. 'Very scarce at South Kelsey.' Local, on account of the places it frequents.

Whinchat. ***Pratincola rubetra*** (Linn.). By no means common, but nests in small numbers yearly.

Stonechat. ***Pratincola rubicola*** (Linn.). Is local, but seen at times on Dicky Barley's Moor, the Black Rabbit Warren, Crosby, and Manton Warrens. There can be little doubt it breeds in other places too. I have never taken the eggs of this species. Div. 2.

Redstart. ***Ruticilla phœnicurus*** (Linn.). Is very rare inland now. It bred at Greyingham in the period 1880 to 1890. I had an egg from a nest there. At Kirton-in-Lindsey it was once commoner than elsewhere, but Mr. Hunsley says (1900), 'I have only seen one for six or seven years.'

Red-spotted Bluethroat. ***Cyanecula suecica*** (Linn.). Has been reported for Manton Common, and even as breeding there. I have no information, and Mr. Cordeaux was more than doubtful.

Redbreast. ***Erithacus rubecula*** (Linn.). Is common and protected by popular superstition in North Lindsey. It begins to sing in autumn with the first clear frost and fall of the leaf, and continues through the winter in fine open weather in the afternoon. You never hear its song in the late spring or summer when other birds break forth into music. The nest has been found in Bottesford Parish in strange places: in old boots and tin cans, in flower-pots and watering-cans, in a pump-spout, and the 'bush' of a wagon-wheel. A fish bass and pair of pattens hung against a wall have been chosen as good situations. In 1889 a large meat can, lying in a hedge bottom, was occupied, and the fearless little mother sat without signs of terror while she was carried about from place to place and shown to interested strangers. I permanently removed the tin for safety from the spot where it was lying into the Manor garden, a distance of a hundred yards. The parent birds remained faithful to their eggs and young. When fed on the maggots of the common meat fly, Robins cast the skins in pellets as Hawks and Owls reject bones and feathers. All our native birds would be as confiding as the Redbreast if they were as kindly treated as it is.

Nightingale. ***Daulias luscinia*** (Linn.). Has extended its range of late years and is fairly common now. Thirty years ago it was never heard. It was in Brumby Wood first in 1888, and every year since, I believe. In 1893 the Vicar in one week heard it in Manby, Div. 2, Thonock, Div. 5, Tumby, Div. 10, and at Burton-by-Lincoln, Div. 6, in the woods. A rare visitor to South Kelsey, Div. 7, but to Gainsborough neighbourhood frequently.

Whitethroat. ***Sylvia cinerea*** (Bech.). Common. They sing more or less during the night, and are often locally called 'Nightingales.'

Lesser Whitethroat. ***Sylvia curruca*** (Linn.). Is at no time common at Bottesford or in the Manby Woodlands. Mr. Young says, 'Fairly numerous; there is at least a pair in most of the woods in the Market Rasen district.'

Blackcap. ***Sylvia atricapilla*** (Linn.). Very local indeed. I have only taken the nest in the School Plantation, Bottesford. Mr. Burton says of Gainsborough, 'A pair in my garden usually.'

Garden-Warbler. ***Sylvia hortensis*** (Bech.). Fairly common throughout the country. It nests in the Manor garden, Bottesford.

Golden-crested Wren. ***Regulus cristatus*** K. L. Koch. Is found in all our plantations in the winter. Large flocks come to us in the autumn and break up into parties, perhaps family ones, of ten to twenty birds. Turning and hanging in every position they may be seen stripping the fir branches of minute insect life. I have personally never found a nest, but am perfectly sure it breeds with us, as I have seen old and young birds together. It has nested in the Decoy Wood, Ashby, and 'once in South Kelsey Rectory garden.' 'Fairly common in the old fir woods about Rasen.'

Fire-crested Wren. ***Regulus ignicapillus*** (C. L. Brehm). Is a very rare autumn migrant. The 'fire-crested' old males of the Gold-crest are frequently mistaken for this species. I have done so myself.

Chiffchaff. ***Phylloscopus rufus*** (Bech.). Comes to Bottesford and North-West Lindsey, but is a fairly rare species. It is found more frequently about Gainsborough. 'Fairly common, but local, about Rasen. More numerous at Linwood than anywhere else I know,' Mr. Young says.

Willow Wren. ***Phylloscopus trochilus*** (Linn.). Very common. I once took fourteen eggs out of a nest.

Wood Wren. ***Phylloscopus sibilatrix*** (Bech.). Is a very rare species at Bottesford, and even in the Manby Woodlands. Mr. Burton says, 'A few about Gainsborough.'

Reed Warbler. ***Acrocephalus streperus*** (Vieill.). Not at all uncommon in suitable localities. Divs. 2, 3, 5.

Sedge Warbler. ***Acrocephalus phragmitis*** (Bech.). Common and nests in the low lands of Bottesford and elsewhere.

Grasshopper Warbler. ***Locustella nævia*** (Bodd.). Is a most uncertain species, but is generally to be heard in hot and dry seasons. It was unusually common in 1872 and 1873. Not heard from 1887 to 1890. I have never seen the nest. Mr. Young writes, 'Not common, and not constant to particular localities, but a few pairs about every year in the Market Rasen district.'

Hedge Sparrow. ***Accentor modularis*** (Linn.). Common. I once found a nest with six eggs in 1875.

Dipper. ***Cinclus aquaticus*** Bech. My only note is the specimen in the small David Hopkins' collection in his daughter's house at Brigg. It was shot on Kettleby Beck between 1845-50. Div. 3.

Bearded Titmouse. ***Calamophilus biarmicus*** (Linn.). Cordeaux 'never met with a Lincolnshire-killed specimen.' One was shot on Brumby West Common, then an ideal place for them, about 1840. When I saw the skin it was in the collection of Mr. Moss, of Brumby Hall. The species is not in Cordeaux, 1899. This must have been a slip, as Cordeaux, 1872, shows.

Long-tailed Titmouse. ***Acredula rosea*** (Blyth). Resident, and generally distributed. In winter I have counted two score birds in a flock. The nest is the most skilful and beautiful native one we have, I consider. The mental power shown in its construction cannot be imagined by those who have not carefully studied this species. I have known one take thirty-two days to build before an egg was laid. The birds pack in winter nights for warmth. I saw a number enter an old Magpie's nest, 15th February 1892. 'Fairly common. It nests regularly in the woods at Claxby.'

Great Titmouse. ***Parus major*** Linn. Common, but hardly abundant. Their nesting places are very varied. One built in a pump in the Manor garden at Bottesford for many years. It swore copiously when water was drawn, but did not leave the nest, and always brought off its young. At Cadney for many seasons a pair have built in a narrow, upright iron pipe. How they move up and down I cannot imagine.

Coal Titmouse. ***Parus britannicus*** Sharpe & Dresser. Found all over, but it cannot be called common. See Mr. F. M. Burton's note, 'The Naturalist,' 1901, p. 191. It is most interesting. The Rev. Walter Earle's specimen should be submitted to the British Museum authorities. Our common British form is not *P. ater* Linn. of Continental writers. In winter you meet with brighter and darker forms, perhaps immigrants from Northern Europe. The Vicar says Mr. Burton's bird is new to him, and may prove a rare variety.

Marsh Titmouse. ***Parus palustris*** Linn. Once fairly common, but rare now, and naturally locally distributed. I have never

taken its nest, though I have often known where they were. The Vicar took it at Eastoft. Divs. 1, 2, 3, 5.

Blue Titmouse. ***Parus cæruleus*** Linn. Common. In winter its ways are wonderful. The little pugnacious beauties will even drive off Blackbirds and Thrushes by sudden and unexpected attacks, and seize upon their food. They are specially fond of a grain of Indian maize from the fowl food. The branch of the nearest bare tree forms a ready anvil where the bird hammers away till a hole is drilled through which the germ can be extracted. As soon as the 'bonne bouche' is swallowed, the corn is dropped, and the fearless bird is among the fowls for another. A pair nested in a farmhouse letter-box, and strongly objected to letters being inserted through the slit. It was a most comical sight to see the pair of birds pulling them out and throwing them on to the ground, as they would do time after time when the letters were purposely put back, during the whole work making a spitting sound in their anger.

Nuthatch. ***Sitta cæsia*** Wolf. Is rare at Bottesford. Saw one 26th May 1879; killed another 10th August 1889. It breeds in the Manby Woodlands.

Wren. ***Troglodytes parvulus*** K.L.Koch. Is common. In 1885 I found a nest in an old cast-off boot in a hedge bottom. The usual roosting nests for the growing young were in the bank close by. In cold weather these birds pack for warmth in all kinds of places, in their old nests if in a warm snug corner, but especially in holes in stacks. The Vicar and I observed over twenty-seven enter one hole in a hay-rick one evening in 1875.

Tree-Creeper. ***Certhia familiaris*** Linn. Is uncommon at Bottesford. I saw it there in 1887, 1894, and 1895. It breeds in the Manby Woodlands, and is found as far east as Cadney and Somerby. 'It is not uncommon, but not abundant at South Kelsey,' and 'not uncommon and nests regularly about Claxby.'

Pied Wagtail. ***Motacilla lugubris*** Temminck. Is very common. Three nested within eighty yards in the Manor House garden-wall, Bottesford, in 1882.

Grey Wagtail. ***Motacilla melanope*** Pall. Not at all uncommon during winter. From 1868 to 1875 it built on the beck banks at Bottesford, but of late years I have never seen it during the nesting season.

TERRESTRIAL MOLLUSCA OF DONCASTER.

HERBERT H. CORBETT, M.R.C.S.,
Doncaster.

The neighbourhood of Doncaster, with its numerous woods and old quarries in the Magnesian Limestone, offers a promising field to the collector of terrestrial mollusca, and during the last few years I have been paying some attention to these animals, with the object of forming a local collection of shells for the town museum. Now, thinking that the results of my observations may be of interest to conchological readers of 'The Naturalist,' I append the following list of species and varieties found, and some notes on their distribution, etc. :—

Succinea putris. Appears to be local, though further search will probably result in other localities being found. Loversal, Cusworth, and Wheatley.

Succinea elegans. Along with the above species at Loversal.

Var. ***minor.*** On leaves of *Nuphar lutea* in the ponds at Wheatley.

Vitrina pellucida. In quarries, under logs and stones everywhere on the limestone, and occurring, though not commonly, on the Triassic Sandstone at Wheatley Wood.

Hyalinia cellaria. Common and generally distributed, but not by any means the most abundant of the genus. The specimens are usually rather small.

Hyalinia alliaria. Very common all over the limestone district and frequent on sand and gravel also.

Var. ***viridula.*** Of this form I have only seen one specimen at Cusworth.

Hyalinia helvetica (=***glabra***). Very local, but abundant in some places. Very fine specimens may be found at Cusworth and Edlington.

Hyalinia nitidula. Probably the most abundant of the genus, but not found off the limestone.

Hyalinia pura. Sparingly distributed and local. Common at Cusworth, and extending to the sand district in Wheatley Wood.

Var. ***margaritacea.*** I have only found this in Edlington Wood.

Hyalinia radiatula. Rare and local. Odd specimens are to be found at Cusworth and Edlington, but I have never found more than two or three at once.

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Hyalinia excavata. This species appears to avoid the limestone district. The only locality where I have taken it is Wheatley Wood, where it is common on decaying stumps of Fir.

Hyalinia crystallina. Very abundant on damp logs in the limestone district.

Hyalinia fulva. Generally distributed and locally common at Cusworth. It occurs sparingly off the limestone at Wheatley Wood.

Helix aculeata. By no means common, but widely distributed on the limestone. Edlington, Marr, Sutton, etc.

Helix aspersa. Abundant on both limestone and sand.

Var. ***exalbida.*** Mr. Paterson has shown me specimens of this var. taken by him in a garden at Wheatley.

Helix nemoralis. Abundant on limestone, and frequent on sand at Wheatley, Armthorpe, etc.

Helix hortensis. Not nearly so abundant as *H. nemoralis*, and apparently confined to limestone, where it is local. Conisborough and Edlington.

Helix arbustorum. Very rare and local. The only place where I have found this species is at Edlington Wood.

Var. ***fusca.*** All the specimens that I have seen from this locality pertain to this variety.

Helix cantiana. Local, but very abundant at Edlington. I found a solitary specimen by the side of the railway at Rossington last summer. Probably transported by train.

Helix rufescens. Extremely and unaccountably rare. The only specimens of which I know are two which were found by Mr. Moor at Hexthorpe.

Helix hispida. Very abundant; varieties occur as follows:—

Var. ***concinna,*** common.

Var. ***subglobosa,*** rather rare.

Helix virgata. Local, and confined to the limestone. Abundant at Kirk Smeaton, less common at Askern and Edlington.

Helix caperata. Widely distributed over the limestone, but seldom common. Most abundant in a quarry at Scawthorpe.

Helix rotundata. Perhaps the most abundant shell in this neighbourhood. It varies little except in the prominence of the spire.

Var. ***pyramidalis.*** Frequent, along with the type and intermediates.

Helix pygmæa. Probably common, but from its small size easily overlooked. I have found it at Cusworth, Scawthorpe, and Edlington.

Helix pulchella. Very local, but common where it occurs: Cusworth, Adwick-le-Street, and Scawthorpe.

Var. ***costata.*** This I have only found at Adwick-le-Street, where it occurs along with the type, but not commonly.

Buliminus obscurus. Rare, but widely distributed over the limestone. I never find more than one or two specimens. These have occurred at Marr, Edlington, and Sprotborough.

Pupa umbilicata. Very local, but frequently abundant: Wadworth, Loversal, Adwick-le-Street, Cusworth, etc.

Vertigo pygmæa. Widely distributed, but only abundant locally. Its chief station is in a somewhat dry quarry at Pickburn. Other stations are Loversal and Adwick-le-Street.

Clausilia bidentata (= ***rugosa***). Very common all over the limestone. All our specimens appear to belong to the small form known as var. *everetti*.

Clausilia laminata. Very local. It used to be abundant on the bark of a felled Ash at Sprotborough. Some years ago the trunk was moved, and since then I have failed to find it in that locality. It is fairly common and very fine in Edlington Wood.

Cochlicopa lubrica. Very common over the limestone, and occurring sparingly also at Wheatley on sand.

Var. ***lubricoides.*** Commoner than the type.

Carychium minimum. Very common on damp logs on the limestone, and occasionally found on sand at Wheatley, etc.

NOTE on SPIDERS.

***Diplocephalus spinosus* (sp. nov. ?) in South-West Yorkshire.**—No less than twelve males of the Spider described in 'The Naturalist,' December 1901, as *D. spinosus* sp. nov. occurred to me during the past year in the neighbourhood of Slaithwaite. It is not, however, a good species in the opinion of our leading English authority (Rev. O. Pickard Cambridge), and, on reconsideration, not even in that of its author himself. It does not specifically differ from, but is a strongly-marked form of, *D. permixtus* Cb., having three spines, instead of the more usual two spines, on the radial joint of the male palpus. In the collection of the former gentleman is an example having three radial spines on one palpus, and two radial spines on the other. All the *D. permixtus* Cb. I have collected here are of the more robust *spinosus* form.—Wm. Falconer, Bank Field, Slaithwaite, Huddersfield, 12th February 1902.

NOTE on TIDAL PHENOMENA.

Three Tides in Twenty-four Hours.—As earthquakes are the order of the day in the West Indies, the following note of my father's, Edward Peacock, F.S.A., of Wickentree House, Kirton-Lindsey, may not be without some little interest to geologists:—'My father (Edward Shaw Peacock, of Bottesford Moors, Brigg), when he was a young man (probably about 1815, but I am not certain of the year), knew old Abraham Egar, who was superintendent at the clough heads of the Double Rivers at Keadby, in Athorpe parish. One day he visited Keadby, and in conversation with him the old man said, 'There has been an earthquake somewhere! Can you tell me where?' My father said he had not heard of one. 'I am sure there has,' the old man answered, 'for there were three tides came up the Trent a few days since, but the extra tide was only a little one.' He then went on to say that he was only a lad helping his father, who held the same post as he then did in 1755, when the great earthquake at Lisbon took place, and then a third tide, a very large one, rushed up the Trent. My father saw in the newspapers some time afterwards that there had been an earthquake, but not a severe one, somewhere in Spain or Portugal, corresponding with the time Abraham Egar indicated.' As our tides come to the Humber from the north these earthquake waves must have travelled round the British Islands before it could run down the North Sea.—E. Adrian Woodruffe-Peacock, Cadney, Brigg, 16th May 1902.

BOOK NOTICE.

Transactions | of the | Hull Scientific and | Field Naturalists' Club | for the Year 1901. | Vol. I. No. IV. | (With Title Page, Index, &c.) | Edited by **Thomas Sheppard, F.G.S.** | — | Price Five Shillings Net. | — | (Free to Members.) | Sold by | A. Brown & Sons, Ltd., Savile St. & King Edward St., Hull. | — | December, 1901. [8vo., paper covers, pp. 157-252, and plates 12-32.]

The bulk of this interesting part is devoted to an excellent paper by Messrs. F. W. Mills and R. H. Philip on 'The Diatomaceæ of the Hull District,' in which no less than about 600 species and varieties are enumerated, with localities, including all the forms recorded in the classical lists of George Norman of 1859 and 1865. The introductory remarks to the paper are of great interest, and the paper is exceedingly well illustrated on 16 plates with 588 figures from drawings by Mr. Mills. The Rev. E. Maule Cole follows with a paper on 'Water-Spouts on the Yorkshire Wolds,' illustrated by 3 plates and a text-illustration. Next comes one of those most interesting articles on 'By-gone Hull Naturalists' written by the Editor, his subject being Adrian Hardy Haworth, of whom a portrait and autograph are given. An unsigned article follows, in which Mr. Tom Petch very thoughtfully discusses the East Riding distribution of the Sea Lavender (*Statice limonium*), and by the same writer is a paper on '*Paludestrina jenkinsi* near Hull.' The next important article is Messrs. T. Stainforth and H. E. Johnson's 'Second List of Coleoptera occurring near Hull.' Mr. C. Crossland next records with figures, '*Mollisia cinerascens* Rehm. at Brough,' a new record for Britain; and the Secretary's Report on the Progress made by the Club during 1900-1901 winds up the part.

Once more the Hull Naturalists are to be congratulated on their enthusiasm, their energy, and their public spirit, and above all upon the scientific value of the papers they publish and the care with which they avoid publishing popular and chatty articles of but ephemeral value and articles outside their geographical area, and we trust that all who wish them well will express their sympathy in terms of the pocket, and purchase this part, if only to recoup the club for their financial enterprise.

Naturalist,

3 JUN 1902

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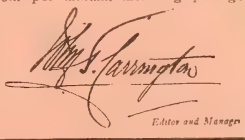

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During the next month or two it is hoped to insert the following articles:—

Ramble in Search of *Clausilia rolphii*.—C. S. Carter, M.C.S.
Yorkshire Bryological Committee—Report for 1901.—J. J. Marshall.
Moss-Flora of Pool, Mid-West Yorkshire.—G. B. Savery.
The Pollard Willow, Bottesford.—Max Peacock.
Yorkshire Plants in the Bicheno Herbarium at Swansea.—Rev. H. J. Riddelsdell, M.A.
'Instinct': Presidential Address to the Lincolnshire Naturalists' Union.—Rev. Alfred Thornley, M.A., F.L.S., F.E.S.
Infusoria of Grimsby District.—A. Smith, F.L.S.
Durham Diptera, a Preliminary List.—Rev. W. J. Wingate.
Birds of Rydal Parish, Westmorland.—Miss M. L. Armitt.
Bulbiferous Forms of *Webera annotina*.—Prof. T. Barker.
Half-Day Ramble at Mablethorpe.—A. Smith, F.L.S., F.E.S.

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JULY 1902.
(Published 1st July 1902).

No. 546.
(No. 324 of current series.)

THE NATURALIST:

A

MONTHLY JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND.

EDITED BY

WM. DENISON ROEBUCK, F.L.S.,

259, Hyde Park Road, Leeds;

WITH THE ASSISTANCE IN SPECIAL DEPARTMENTS OF

J. GILBERT BAKER, F.R.S., F.L.S.,

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Hilderic Friend.—Studies in Irish Enclytræids, 8vo. reprint, 1902. [Author.
H. Wallis Kew.—On the Mucus-Threads of Land-Slugs, 8vo. reprint, 1902. [Author.
Rochdale Literary & Scient. Soc.—23rd Annual Report, for year 1901. [Society.

LAKELAND BIRDS, Studies of. By **Mary L. Armitt.** SECOND SERIES now ready, post free, **1s. 2d.**; both series **2s. 3d.**, from GEORGE MIDDLETON, Ambleside.

Birds of the Isle of Man.—Being engaged in the collection of material for a work on Manx Birds, I would gratefully receive and acknowledge information bearing on the subject, or references to books, periodicals, etc., in which such occur, and which may not have come under my notice.—P. RALFE, The Parade, Castletown, Isle of Man.

INFUSORIA OF THE GRIMSBY DISTRICT.

ARTHUR SMITH, F.L.S., F.E.S., ETC.,
Hon. Secretary and Curator of the Grimsby and District Naturalists' Society.

I BELIEVE that this list is the first on the subject that has been published for this County (Lincolnshire), certainly for this district; and I have to thank members of the Grimsby Naturalists' Society for their help in bringing samples of water and deposit from localities they may have been visiting. To Mr. Parker I am indebted for all records from Irby. The rest are recorded from my own takings, together with those brought to me. The chief work of identification, however, has been carried out most willingly by our best of local microscopists, Mr. Walter J. Wood, F.R.M.S., who has spent much time and care in naming specimens of microscopic pond life. The whole of these have been taken in the Grimsby area, from June 14th to September 30th, 1900.

As will be seen, they have been roughly classified into three chief groups, and the names are chosen from the most popular works on the subject, which will give a clue to microscopists who find so much difficulty arising out of the many synonyms given to these tiny organisms.

FLAGELLATA.

Monas lens Ehr.
Brocklesby, Humberstone, Little Cotes, Clee.

Monas crepusculina Ehr.
Brocklesby.

Cercomonas globulus.
Brocklesby.

Heteromeda ovata. Little Cotes.

Trichomonas limacis Duj. Clee.

Trachelomonas cylindrica E.
Irby.

Euglena viridis E.
Humberstone, Little Cotes, Irby, Keelby, Clee, Great Cotes.

Euglena acus E. Irby.

Euglena longicauda Duj.
Irby, Keelby, Clee, Great Cotes, Scatho.

Euglena (Phacus) pleuronotes
Duj. Irby.

Astasia limpida Ehr. Clee.

Cryptomonas globulus Ehr.
Great Cotes.

Chætoglena volvocina.
Little Cotes.

Dinobryon sertularia. Irby.

Amblyophis viridis Ehr.
Irby, Clee.

Crumenula texta.
Clee, Little Cotes.

Cyclidium glaucoma.
Great Cotes.

CILIATA.

Paramecium aurelia E.
Brocklesby, Humberstone, Irby, Little Cotes, Healing, Keelby, Scatho.

Alyscum saltans Duj.
Humberstone, Great Cotes, Scatho, Little Cotes.

Coleps hirtus Ehr.
Humberstone, Healing, Irby, Clee, Great Cotes, Scatho.

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Euplotes charon.
Keelby, Little Cotes.

Euplotes varius. Little Cotes.

Euplotes patella. Keelby.

Nassula elegans. Little Cotes.

Loxophyllum (Amphileptus) meleagris Duj.
Irby, Little Cotes.

Amphileptus fasciola Ehr.
Little Cotes, Keelby,

Chilodon cucullulus.
Little Cotes, Healing, Keelby, Clee, Scatho.

Chætonotus larus (placed by Ehr. among the Rotatoria, by Dujardin among the Infusoria; recently assigned a special sub-class, *Gastrotricha,* in the Rotatoria).
Little Cotes, Healing, Great Cotes.

Stylonichia histrio Ehr.
Little Cotes.

Stylonichia pustulata.
Great Cotes.

Stylonichia mytilus.
Healing, Keelby, Clee, Scatho.

Stylonichia lanceolata. Irby.

Colpoda cucullus. Healing.

Stentor polymorphus.
Irby, Little Cotes.

Stentor mulleri. Little Cotes.

Bursaria mulleri. Irby.

Bursaria vernalis. Irby.

Bursaria truncatella.
Little Cotes.

Vorticella microstoma.
Irby, Keelby, Clee, Little Cotes.

Vorticella nebulifera Ehr.
Clee, Great Cotes, Scatho, Little Cotes.

Glaucoma scintillans Ehr.
Irby, Clee.

Chætotyphla armata Ehr.
Irby, Little Cotes.

Dileptus folium.
Keelby, Great Cotes, Little Cotes.

Acineria incurvata. Keelby.

Acineria acuta. Clee.

Urostyla grandis. Keelby.

Kondylostoma patens Duj.
Keelby.

Aspidisca lynceus.
Great Cotes, Little Cotes.

Leucophrys patula. Clee.

Trachelius lamella. Clee.

Diselmis viridis. Irby.

Uroleptus lamella. Clee.

Trachelocerca olor. Clee.

Phialina viridis Bory.
Great Cotes.

Loxodes bursaria.
Great Cotes, Little Cotes.

Loxodes rostrum Ehr. Irby.

Loxodes viridis. Great Cotes.

Plagiotoma lumbrici.
Great Cotes.

Kerona mytilus. Great Cotes.

Kerona polyporum. Little Cotes.

Scyphidia rugosa Ehr.
Great Cotes.

Pleuronema chrysalis.
Little Cotes.

Enchelys nodulosa. Little Cotes.

Oxytricha pellionella Duj.
Little Cotes.

Oxytricha gibba. Keelby.

SUCTORIA.

Acineta grandis. Little Cotes.

NOTE on YORKSHIRE CRUSTACEA.

Spiny Lobster off Flamborough.—A very fine specimen of the Spiny Lobster (*Palinurus vulgaris*) has been presented to the Grimsby Museum. It was taken in the trawl off Flamborough Head by Mr. Campion on April 24th and measures about 12 inches, not including the very long antennæ. According to Bell it may be considered a rarity in northern waters, though plentiful on the western and southern coasts.—A. SMITH, 5, Cavendish Street, Grimsby, 30th April 1902.

Naturalist,

THE YORKSHIRE BOULDER COMMITTEE AND ITS FIFTEENTH YEAR'S WORK, 1900-1901.

PERCY F. KENDALL, F.G.S., *Leeds, Chairman,*
AND
J. H. HOWARTH, F.G.S., *Halifax, Hon. Secretary.*

In furtherance of the objects of the Committee an excursion to the Lake District was arranged by the Yorkshire Geological and Polytechnic Society. The area chosen for study was the country round Keswick, which is so rich in rocks of pronounced petrological characters which might be expected to have travelled over into Yorkshire. The influence of this excursion is at once to be seen in the records of 'erratics' which have already been recognised. The peculiar rocks of Eycott Hill and Carrock Fell have been found at Dimlington, and a well characterised volcanic breccia occurring as boulders on Dunmail Raise has been found at Hornsea, along with a specimen of the well-known Armboth Dyke.

A striated surface discovered on the southern slope of Skiddaw has been reported to the Committee as the only convenient method of recording an isolated but valuable observation.

The reports from the coast tract of Yorkshire continue to yield new stations for the very characteristic Norwegian rhomb-porphyries and elæolite-syenites. The visit paid by the geologists of Yorkshire to the Cheviots and some of its results were commented upon in the last report of this Committee. Two facts stand out in the present series of records, in the light of a more intimate acquaintance with the Cheviot rocks. While we find that many observers note the great preponderance of Cheviot porphyrites over every other type of far-travelled stones, no example of the Cheviot granite has ever been identified in Yorkshire. The Chairman has long been impressed with the singularity of this absence of evidence, and after examining the rock in situ has made careful search for it at Filey, Bridlington, Whitby, and other places, where the porphyrites abound. No clearly identifiable specimen could be found. A collection was made of granitic pebbles from the shore at Whitby in order to get a sufficient series to base an opinion upon. Seventy of these stones have been sliced, and the results of a preliminary examination are not encouraging to the hope that any positive identification of the Cheviot granite can be made. The results

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of a fuller examination will be presented in the next report of the Committee. Meantime it may be remarked that the striking disproportion which must exist between the boulders of the Cheviot granite and those of the porphyrites will perhaps find an explanation in the conditions which prevailed in the Cheviots themselves during the time when the distribution of the erratics was in progress.

Mr. Stather's numerous records of greywackes of a similar type in various parts of Yorkshire and on the lower slopes of the Cheviots suggests the probability of their derivation from the basin of the Tweed. Two very remarkable discoveries are reported by Mr. Fearnside. The gravels of the Yorkshire Calder have long been noted for remarkable uniformity in the character of the included stones; besides local rocks there had been found nothing but well-defined types of Lake District rocks, andesites, agglomerates, and the granitic rocks of the Buttermere and Eskdale types, all such as might have come by way of Lancashire from the western side of the Lake District, and perhaps one or two examples of the Galloway granites. Mr. Fearnside now adds the Norwegian rhomb-porphyry, brockram, brown flints, and Shap granite—discordant elements difficult to reconcile with the very consistent series previously known. Mr. H. H. Corbett, of Doncaster, points out a singular fact: the three boulders of Shap granite found respectively at Royston, Adwick, and Balby have a vein of felspar running through each of them.

Mr. Corbett has sent the Committee two Ordnance Maps of the district around Doncaster, upon which the distribution is shown of—

1. Boulder Clay.
2. Peat and Warp.
3. Gravels comprising principally Triassic pebbles.
4. Gravels comprising principally Coal Measure pebbles.
5. Gravels comprising both Triassic and Coal Measure pebbles.

These maps appear to show that while Coal Measure rocks are found to the *east* of the Coal Measures of Yorkshire, the Triassic pebbles are found to the *west* of the Triassic area in the district. In part of the area mapped the two are mixed.

Mr. Corbett writes:—Nearly all these gravels are strongly current-bedded, the dip being always towards the south-east. This is the case even with gravels on the south-east side of the

Don Valley. These do not dip towards the Don, but towards the Trent. Just outside the boundary of the map, near Bawtry, are gravels of Triassic pebbles with boulders of *Lower Magnesian Limestone with Axinus* below them.

About Hatfield Moor, in the low peat land, are some low-lying mixed gravels with large erratics. (*a*) Granite, (*b*) Millstone grit and gannister; and (*c*) Whin sill, gannister, and grit. (? Borne by floating ice when the thaw had begun.) In the Balby boulder clay (*d*) are numerous erratics as already reported, e.g., Shap granite, Eskdale granite, quartz porphyry, etc.

About Cusworth (*e*) are numerous erratics, turned up by the plough, e.g., gannisters, grits, mountain limestone, whin sill, quartz porphyry, etc.

At Cadeby (*g*) are large rounded boulders of Lower Magnesian limestone and coarse gravel, mostly carboniferous, with a few mountain limestones.

Very similar material is found at Conisborough (*h*).

At Adwick-on-Dearne (*j*) is a large Shap boulder. It is worthy of remark that the Shap boulders found at Royston, Adwick, and Balby are each traversed by a vein of felspar. (? Are they all fragments of one piece.)

In the Balby clay and in the gravels near Bawtry a very large percentage of the Lower Magnesian limestone boulders contain fossils, *Axinus, Mya, Turbo,* etc. Near the base of the Lower Magnesian is a very constant bed containing these fossils. The only place where I have found this fossil bed cropping out is at Hooton Pagnell (*k*). Here it is about 15 feet thick.

CUMBERLAND.

Reported by JOHN CARLTON, Hull Geological Society.

SKIDDAW. On left of pathway to top of Skiddaw, about 30 yards above second hut, 1,450 feet above Keswick,

Glacial striæ were observed on solid slate from which the turf had been recently removed. Direction W.S.W.

YORKSHIRE.

Reported by G. A. AUDEN.

DRINGHOUSES, YORK.

Carboniferous sandstone, two large boulders, one weighing 3—4 tons, obscurely striated.

Reported by W. Gregson, F.G.S.

Kirklington, Six Miles N.E. of Ripon, at Coldstone House Farm.

One galliard or ganister, 4 ft. × 2½ ft. × 2 ft. subangular, top smoothed and grooved, striæ N. and S.

Reported by W. G. Fearnside.

Horbury, near Wakefield. In an excavation for the south pier of a bridge over the river Calder.

Three Shap granite, one brockram, one rhomb-porphyry, one brown flint. The boulders were taken up in the scoop of a dredger, along with a portion of basal clay, when excavating for the concreting of the foundations of the bridge pier.

Reported by P. F. Kendall, F.G.S.

Settrington, Vale of Pickering. In fields about half a mile S.W. of railway station a thin scattering of foreign pebbles occurs among the fragments of the subjacent oolite. Twenty were collected: they include—

One vein quartz pebble, (?) trias, six saccharoid quartzites, one liver-coloured, (?) trias, two carboniferous sandstone, one felspathic, one red jasper, four flints, one fine-grained gneiss (?), one basalt, one sandstone, one limestone (? local).

Reported by E. Hawkesworth.

Wighill, near Tadcaster. Taken from material excavated in making a drain.

Two dolerites, one chert.

Kettleness, near Whitby. On beach just south of Kettleness.

One Cheviot porphyrite, one elæolite-syenite, one gneiss.

Wykeham, Vale of Pickering. From gravel-pit.

One dolerite, one Cheviot porphyrite, one Cheviot andesite, two grey flints, one elæolite-syenite (?), a small pebble.

Brompton, near Northallerton. The turnpike road from Northallerton to Stockton cuts through a ridge of drift just before reaching the village. It yielded—

One rhyolite, one dolerite, one gabbro (?), two carboniferous limestones (black), and carboniferous sandstones.

Communicated by the Boulder Committee of the Hull Geological Society.

Ayton, near Scarborough.

One rhomb-porphyry.

Hutton Bushell, Vale of Pickering. In gravel-pit at east end of village.

One rhomb-porphyry.

Wykeham, Vale of Pickering. In sand-pit behind the Downe Arms Hotel.

Cheviot porphyrite, lias.

Seamer. In glacial gravel in pit contiguous to railway station.

Rhomb-porphyry, Cheviot porphyrite, basalt, red granite, magnesian limestone (Roker type), carboniferous limestone, black flint lias, and much sandstone from local sources.

Etton, near Beverley. In strong boulder clay at east end of the village.

Cheviot porphyrite (several varieties), greywacke sandstone, lias, etc.

Gardham, near Beverley. A shallow pit in chalky gravel west of the village contained a few foreign pebbles, among which Cheviot porphyrites were predominant. Basalt. Carboniferous limestone was also noted.

Reported by Thomas Sheppard, F.G.S.

Meaux, near Beverley.

Rhomb-porphyry, Cheviot-porphyrite, carboniferous limestone and sandstone, lias.

Reported by J. W. Stather, F.G.S.

Leconfield, near Beverley.

In old gravel-pit east of Pump Bridge. Gravel consisting of chalk with a few foreign pebbles, chiefly Cheviot porphyrites and greywacke sandstone.

Cherry Burton, near Beverley.

Chalk capped with eight feet of boulder clay half mile east of station. Among the pebbles of non-local rocks in the clay Cheviot porphyrites greatly preponderate. Basalts are also plentiful. Greywacke sandstone and lias were also noted.

Bartindale Farm, near North Burton. Fifty yards east of house.

Basalt, 4 ft. × 3 ft. × 3 ft.

Grindale-on-the-Wolds.

Many boulders occur in this neighbourhood, and a pavement has been made of them at Field Spring. Basalts are the most common.

Dimlington.

One dolerite, Eycott Hill; one gabbro, Carrock Fell.

Ferriby Common, near Hull.

Chalky gravel in a small pit on the Humber side contains a small percentage of foreign rocks, including rhomb-porphyry, basalt, carboniferous limestone.

Thornton Dale, Vale of Pickering.

In the cutting east of the station, through beds mapped as glacial, no trace of foreign rocks seen, all local oolite.

Reported by F. F. Walton, F.G.S.

Hornsea.

One volcanic breccia, 4 in. × 3 in. × 3 in., identical with boulders found in stream at Dunmail Raise, Cumberland.

One quartz porphyry (Armboth Dyke), 4 in. × 3 in. × 3 in.

NOTES on YORKSHIRE GEOLOGY.

Current Bedding in the Carboniferous Limestone.—Mr. R. H. Tiddeman, in his suggestive papers on the limestone knolls of Craven, has expressed the opinion that the Carboniferous Limestone on the upthrow (northern) side of the southern Craven fault was accumulated in shallow water. On a visit to Malham about three years ago I found several angular fragments of distinctly current-bedded limestone in the screes above the waterfall at Gordale Scar. I have made no attempt to trace these blocks to the bed from which they originate, and I think it would be a profitable task for some of our young and active geologists.—P. F. Kendall, Leeds, 7th June 1902.

Origin of the Rosedale Ironstone.—Mr. C. Fox Strangways mentions in his great Monograph of the Jurassic Rocks of Yorkshire the occurrence of 'water-worn fragments of Belemnites and Ammonites, the latter being unmistakable Lower Lias forms,' in the Dogger at Saltwick, near Whitby. In other parts of his memoir he describes the evidences of erosion of the Upper Lias prior to the deposition of the Dogger. A small observation I made two or three years ago throws some additional light upon the matter. My friend Rev. J. Hawell, F.G.S., showed me the spoil of an old excavation in the Middle Lias near Kildale Station, and I at once recognised in the ferruginous oolitic ironstone a very strong resemblance to the ironstone pebbles which we had seen a few days previously in the Dogger at the Wain Stones, near Ingleby Greenhow. Two ideas present themselves to my mind regarding these facts—one, that as there was an extensive denudation of the Lias during the deposition of the Dogger, it is not improbable that the Dogger ironstone may have derived much of its material from the denudation of the Middle Lias ironstone. The other reflection is that, as the lowest horizon of the Lias to which the Dogger erosion-plane has cut in the Cleveland area is still above the Jet-rock, there must exist elsewhere some old axis of disturbance along which the Lias was folded and denuded before or during the Dogger time actually down to the Lower Lias. As the Upper Lias is practically intact right down to the Humber, except for Pre-cretaceous erosion on the Market Weighton anticline, I think that the source of the Lower and Middle Lias débris in the Dogger must be sought to the north of the Cleveland area, perhaps on some of the folds which can be shown to have been produced in pre-Permian times and accentuated by subsequent movement.—P. F. Kendall, Leeds, 7th June 1902.

THE YORKSHIRE BOULDER COMMITTEE AND ITS WORK—A RETROSPECT.

THOMAS SHEPPARD, F.G.S.,

Secretary of the Yorkshire Coast Erosion Committee; Curator of the Municipal Museum, Hull.

'Shall we, like schoolboys, think that stones were made
Only to cast at varlets?' —*The Lithiard.*

'He knows through all the district where each boulder stone is dwelling,
And its size and weight and taste and smell he enters in a book.'
—R. H. PHILIP.

THE increased interest being taken in the examination of the various 'erratic blocks' of this county, and their bearing upon the condition of things which prevailed during the last of the series of great geological events—the Glacial Period—has induced me to put upon record the following few notes on the history and work of the Yorkshire Boulder Committee, through whose efforts we now know so much of the direction of the various glaciers and ice-streams formerly existing in the North of England.

To note the position, size, and kind of any one boulder, or 'erratic,' is in itself apparently of not much moment. Yet it is to a very great extent to the accumulation of such records that the present state of our knowledge of the size and movement of our ancient glaciers is due. The collection and classification of these facts is necessary, and much more valuable than any quantity of 'theory.' On more than one occasion the presence of a particular kind of rock in a particular situation has entirely overthrown a theory which has perhaps been too hastily formulated.

It is nearly thirty years ago that a Committee was appointed by the British Association 'for the purpose of recording the position, height above the sea, lithological characters, size, and origin of the erratic blocks of England, Wales, and Ireland, reporting other matters of interest connected with the same, and taking measures for their preservation.' For sixteen or seventeen years various scattered records of a miscellaneous character appeared in the Association's Annual Report, some of which referred to Yorkshire boulders. But these records in themselves, owing to being so few in number, were not of much service to glacial geologists.

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In November 1886 a meeting of Yorkshire geologists was held in the Leeds Mechanics' Institution, when a resolution was passed, establishing a Committee to receive reports and conduct observations relative to the erratic blocks of Yorkshire. Circulars, and schedules indicating the information required, were circulated amongst geologists in all parts of the county, and met with a hearty response. The Committee was formed in connection with the Yorkshire Naturalists' Union, and its annual reports have been printed regularly from the beginning, in 'The Naturalist,' the first report appearing in January 1888. At this time the Chairman was the late Professor A. H. Green, F.R.S., and its Secretary the late Mr. S. A. Adamson, F.G.S.—two exceedingly enthusiastic geologists, whose names will ever be dear to Yorkshire 'hammer-men.' It is interesting to peruse the contents of this first year's report. Mr. C. D. Hardcastle gives an account of the 'Greystone' at Leeds; the Rev. E. M. Cole some 'Notes on the Flamborough Head Boulders'; Mr. Wm. Gregson reports upon the 'Erratic Blocks in the North Riding of Yorkshire'; the late Mr. R. Taylor Manson gives interesting details of the 'Stranger's Stone' near Barnard Castle, 'Bulmer's Stone,' Darlington, and others; Mr. John H. Phillips contributes 'Notes on Shap Granite Boulders at Scarborough'; and there is a Note upon the 'Hitching Stone,' Keighley Moor, by the late Dr. H. W. Crosskey. Many of the gentlemen named have regularly contributed interesting records of the boulders of the county to the Committee ever since. Mr. R. Taylor Manson, of Darlington, who has only recently 'joined the majority,' has a large travelled boulder of Shap granite, suitably inscribed, erected to his memory—surely an appropriate and lasting monument to one who has done so much towards encouraging geological science.

As in the case of all subsequent reports, the result of the first year's work of the Yorkshire Boulder Committee was submitted to the British Association, who gratefully accept the assistance of the Yorkshire geologists, and add: 'Were a similar Committee organised in each county, the work of the Committee of the Association could soon be brought to a satisfactory conclusion.' Each year afterwards has the Yorkshire Committee greatly assisted the larger Committee, in many instances even going so far as to comprise the greater portion of the records published by the Association.

The second report of the Yorkshire Boulder Committee, which appeared in November 1888, contains many points of

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great interest. The Committee had prepared a map of the county, upon which the various boulders recorded were indicated, and even in those days the map was remarkable for the unusual proportion of records upon its *eastern* portion! If this map has been added to year by year in the same manner, the same feature will doubtless be noticeable, though to a more marked degree. In this second report the Rev. E. M. Cole gives details of many boulders, principally in the Filey neighbourhood. Mr. Samuel Chadwick (who is now in New Zealand) was responsible for quite a large number of North and East Riding records. These early reports are remarkable for their many records of 'whinstone,' 'sandstone,' etc.—rocks which are pretty plentifully distributed in all our clays, and which do not now demand quite so much attention from geologists. Mr. H. M. Platnauer describes the collection of far-travelled stones which were unearthed during the construction of the new station at York, these specimens having been preserved in the grounds of the Yorkshire Philosophical Society. Many boulders of Shap granite (always interesting from the fact that it is so easily recognisable, and has travelled from Shap Fell, near the Lakes) are noted in these early lists. The late Mr. J. W. Davis, F.G.S., and the late Mr. Robert Mortimer contributed to this second report. The former dealt with the famous Norber Blocks, and the latter described a quartzose sandstone near Stamford Bridge. At this period the Chairman of the Committee, Professor Green, was promoted to the Professorship of Geology at Oxford, and Professor L. C. Miall was elected Chairman in his stead.

The third report, issued in October 1889, is the last one edited by Mr. Adamson, who died after a brief illness in March 1890. Several pages of this lengthy report are occupied by particulars of boulders observed by Mr. Samuel Chadwick in various parts of the east of Yorkshire. Numerous other valuable records also appear, but particular mention should be made of the careful and detailed work of Mr. W. Watts, F.G.S., Engineer to the Oldham Corporation Waterworks. A list of the then members of the Yorkshire Boulder Committee is given in the report just referred to, which it may not be uninteresting to quote. Several of the gentlemen are unfortunately no longer with us, and three of the first Committee, viz., Messrs. J. E. Bedford, E. M. Cole, and Wm. Horne, are still members of the present Committee. The Committee consisted of:—Professor L. C. Miall, F.L.S., F.G.S. (Chairman), Messrs. C. D. Hardcastle (Vice-Chairman), J. E. Bedford, F.G.S., C. Brownridge,

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F.G.S., S. Chadwick, F.G.S., E. M. Cole, M.A., F.G.S., J. W. Davis, F.S.A., F.G.S., Professor Green, M.A., F.G.S., Wm. Gregson, B. Holgate, F.G.S., Wm. Horne, F.G.S., Jas. Spencer, T. Tate, F.G.S., J. W. Woodall, H. W. Crosskey, LL.D., F.G.S., and S. A. Adamson, F.G.S.

The fourth report appeared in May 1892, and was edited by Mr. Chadwick. In connection with this the late Mr. Thomas Tate, an ardent petrologist, had visited the Lake District and reported upon the microscopic structure of the various rocks which occur there. This was of great assistance to the Committee in their work, as several of the ice-borne boulders with which they had to deal originated from that neighbourhood. In consequence of Mr. Chadwick leaving the country on account of ill-health, the secretaryship fell into the hands of Mr. Thomas Tate, whose extensive knowledge of the microscopic structure of rocks proved of great service. Mr. Tate edited the reports until the date of his death, and under his care the Committee's fifth, sixth, seventh, eighth, ninth, and tenth lists appeared. In these later reports not only were the measurements and other particulars of the masses of stone given, but their bearing on the geological history of the county was referred to, in this way greatly adding to the interest and value of the lists.

In 1893 the Committee's seventh report appeared. This contained several valuable records by the Rev. W. R. Bell, Mr. John Burton, Mr. C. W. Fennell, and Mr. James Spencer. Mention is also made of the fact that an 'East Riding Boulder Committee,' consisting of Hull men, had been formed for the thorough examination of the boulders of that area. From 1893 onward the East Riding Committee's records have formed a more and more important feature in the County Committee's report. The eighth report (October 1894) is principally remarkable for the lengthy list of boulders in the Barnsley neighbourhood, submitted by Mr. W. Hemingway, and for the particulars supplied by half a dozen members of the recently-formed East Riding Committee. The following report, besides containing many records supplied by Messrs. J. Burton, R. Law, and others, includes two tables, in which no less than 2,070 boulders, each being over a foot in diameter, and occurring on the coast between Withernsea and Hornsea, are enumerated and classified. This was the work of the East Riding Committee. The tenth report, Mr. Tate's last, was undoubtedly his best. A great impetus had been given to the work of the Committee by the

addition to its membership of Mr. Percy F. Kendall, F.G.S. The appearance of Mr. Kendall into Yorkshire marked an epoch in the history of the glacial geology of the county. Mr. Kendall, as Secretary of the British Association Committee of Erratic Blocks (appointed on the death of Dr. Crosskey) and as Professor of Geology at the Yorkshire College, had exceptional opportunities for assisting the Committee in its work, and of these he has availed himself to the utmost. In fact, the greater part of the important records that have recently appeared are certainly due, directly or indirectly, to Mr. Kendall's influence.

On Mr. Tate's death, another good petrologist, Mr. J. H. Howarth, F.G.S., was elected Secretary, and Mr. Kendall the President. In these capable hands the Committee's work is now entrusted, and we hope it may long be so. During the last five years the Committee's reports have bristled with interesting items of information, some of the greatest possible importance. Great strides have been made in tracing the path taken by the ice-stream laden with Shap granite. In 1896 boulders of that rock were found in Lincolnshire, our neighbouring county, for the first time. Important advances have also been made in our knowledge of the distribution of Scandinavian and Baltic boulders in this country. Many Lake District rocks have been found in new situations; chalk fossils, foreign to the Yorkshire Chalk, have been found in the Holderness drift, hundreds of coast boulders have been tabulated and classified by Mr. J. W. Stather, F.G.S., with interesting results; many varieties of Scandinavian and Cheviot rocks, common in the clays of East Yorkshire, have been recognised in their original homes. But to enumerate all the recent interesting 'finds' would mean another paper as long as this at least! I trust, however, that sufficient has been said to show that there are indeed 'sermons in stones,' and that most important and interesting facts relative to the movement of our ancient glaciers can be adduced from an examination of the pebbles on the beach, or the stones in the clay and gravel pits.

I have had the advantage of seeing a proof of Mr. Sheppard's paper on the work of the Yorkshire Boulder Committee. With a modesty, natural under the circumstances, Mr. Sheppard says little about the work of the East Riding Boulder Committee; but no retrospect can do justice to the facts, however, which

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does not specially emphasise the valuable work done by the East Riding members. To Mr. J. W. Stather, F.G.S., and to Mr. Sheppard himself, acknowledgments are specially due for researches carried on (for some nine years now) in a thoroughly systematic manner, with unceasing care and unflagging energy, and great assistance has also been rendered by Mr. F. F. Walton, F.G.S., Mr. W. H. Crofts, and others; and it is a real pleasure to bear this testimony to the East Riding workers.

Our gratitude to the Chairman, Mr. Kendall, can never be told, but is graven deeply in the hearts of all of us.

J. H. Howarth.

NOTE on YORKSHIRE LEPIDOPTERA.

Melanic Variety of *Phigalia pedaria* at Doncaster.—This variety, which has been gradually increasing in West Riding localities since its discovery (circ. 1880), has made its appearance in Wheatley Wood for the first time this spring, when I took a specimen on 21st March.—H. H. Corbett, Doncaster, 6th April 1902.

NOTE on LINCOLNSHIRE FLOWERING PLANTS.

Queries anent the White Thorn.—Can any brother botanist give me an idea of the age which the White Thorn (*Cratægus oxyacantha*) will attain when it is permitted to grow into a tree and to run its natural course? Is there any proof of the very general belief that the two-seeded variety (*C. oxyacanthoides*) is the old English Thorn, and that the common hedge-row variety (*C. monogyna*), which is one-seeded, is a modern introduction from abroad? I have looked through the literature on the subject, but can find nothing about these two points; and when asked for my opinion a short time ago about these questions I had to acknowledge I had never met with any evidence which was of any value.—E. Adrian Woodruffe-Peacock, Cadney, Brigg, 15th April 1902.

NOTE on YORKSHIRE PALÆONTOLOGY.

***Saccammina carteri* Brady in Yorkshire.**—The occurrence of this interesting foraminifer at two localities in Yorkshire seems worth recording, though it is unfortunately impossible to indicate the horizon in the carboniferous series to which the examples might be referred. The first specimen was found in a pebble of limestone in a gravel-pit excavated in the glacial deposits on the left bank of the river Wharfe, about fifty yards above the wooden bridge in Bolton Woods.

The other specimen—the most beautiful example I have ever seen, though I have collected the species from the well-known "Pea Post" of Northumberland—is a block of yellowish limestone, presumably an erratic, found on a wall in the village of Clapham. The colour and aspect of the limestone, which is closely packed with *Saccammina*, suggests that it has undergone some dolomitisation; and if that surmise be correct, then perhaps some geologist with a more detailed knowledge of the Lower Carboniferous rocks than I possess may be able to indicate its probable horizon.—P. F. Kendall, Leeds, 7th June 1902.

NOTE on YORKSHIRE PLANTS.

Propagation of *Myriophyllum* by 'Winter Buds.'—Last August I placed some flowering plants of *Myriophyllum verticillatum* in a small aquarium. During the whole of the winter a detached terminal of one stem has floated on the surface of the water. Two weeks ago I sank the piece by means of a small stone tied to it. Now (6th April 1902) it is growing and unfolding its whorls of leaves.—H. H. CORBETT, Doncaster, 6th April 1902.

NOTE on YORKSHIRE BIRDS.

Bird Notes from Easington and Spurn, Spring 1902.—We are having very cold weather here—had a little snow to-day. An odd Swallow (*Hirundo rustica*) here on the 17th April, and only the odd one; still I do hope that they have not come to trouble in crossing. Five Red-legged Partridges (*Caccabis rufa* L.) were picked up one day in March on the Humber shore. They must have dropped short of the land and got drowned in crossing from Lincolnshire. I heard the first Cuckoo (*Cuculus canorus*) on the 17th April. A Ring-Ouzel (*Merula torquata*), a Chiffchaff (*Phylloscopus minor*), and Willow Wren (*P. trochilus*) were killed by flying against the Spurn Lighthouse on 16th April, and other small birds. A fine male Pintail Duck (*Dafila acuta*) was picked up here 29th April. It must have flown against something, as it soon died. In skinning it for my collection I found it was very badly hurt. On the 7th inst. a male Dotterel (*Eudromias morinellus*), very tame, was seen here in a grass field near the sea amongst a small flock of Whimbrel (*Numenius phæopus*). Flock of Godwit (*Limosa* sp.) about same day.—PHILIP W. LOTEN, Easington, 13th May 1902.

NOTES on LINCOLNSHIRE BIRDS.

Heron Nesting at Laughton, Lincolnshire.—Mr. James Allinson, keeper to Mrs. Meynell-Ingram, of Laughton, recently discovered a newly-vacated Heron's nest on a Scotch Fir, near Peacock Hole, Bunker's Hill, Laughton. The Heronsew (*Ardea cinerea*), more rarely Heronshaw (from shaw, a wood), is commonly found in the peat-dykes of this neighbourhood, but cases of nesting are rare.—E. ADRIAN WOODRUFFE PEACOCK, Cadney, Brigg, 20th May 1902.

Pied Flycatcher at Lea, near Gainsborough.—Watched a Pied Flycatcher (*Ficedula atricapilla* L.) for some time, in some trees in the field in front of Lea Hall. It was very tame, and gave me a splendid view of it, reminding me much of a small Martin. It looked very cold, but was in lovely plumage, with a rosy tinge on its white breast. This is the first dated and personal record which I have of the occurrence of this bird in Lea; but some years ago the late Sir Charles Anderson's butler shot one almost in the same spot at the same time of year. I had never before seen the bird myself alive.—MARGARET L. ANDERSON, Lea Hall, Gainsborough, 13th May 1902.

Great Spotted Woodpecker and Hawfinch at Gainsborough.—Amongst the birds coming to feed on bones placed outside my dining-room window this last winter, the Great Spotted Woodpecker (*Dendrocopus major*) is worthy of record. It was first seen on the 9th March and it has continued to come at intervals up to the present time. It feeds only on a hollow marrow bone filled with 'dripping,' and its powers of consumption are considerable. I have seen it drive little birds away, but they don't seem to have any fear of it, and I have seen a small Tit feeding at one end of the bone and the Woodpecker at the other.

The Hawfinch (*Coccothraustes coccothraustes*) came on several occasions to crumbs thrown out on the grass, but it was never seen to eat them.—F. M. BURTON, Highfield, Gainsborough, 14th April 1902.

NOTES on LINCOLNSHIRE BIRDS.

Variety of Coal Tit at Gainsborough.—In the June 1901 number of 'The Naturalist,' p. 191, I recorded two specimens of this bird (*Parus britannicus*) and alluded to another in the museum at the Rev. W. Earle's School at Bilton Grange. The two birds returned to the 'bones' this year on the 11th January and are still here. One of them on careful inspection is not so distinctly marked as the other, the grey patch at the back of its head, though abnormal in shape, being more like that usually seen on an ordinary Coal Tit. Last summer I had another opportunity of seeing the Bilton specimen, and I find it is not so like the birds here as I supposed. It is, I think, a Coal Tit with a slight variation in the shape of the patch. A good ornithologist, who was lately staying with me, says he never saw any like these two Tits before, but thinks from their small size and uniform dark colour that they resemble the Marsh Tit (*Parus palustris*) more than the Coal Tit. If so, the difficulty of identification becomes greater (a cross between the two is, I suppose, quite inadmissible). Another winter I should be very glad if any skilled ornithologist would pay me a visit by arrangement and report on the birds.—F. M. Burton, Highfield, Gainsborough, 14th April 1902.

Ruff and Reeves, and late Fieldfares, at Lea, near Gainsborough.—While walking in Lea Marshes, on the afternoon of Thursday, 24th April, I observed three birds which I have very little reason to doubt were a Ruff and two Reeves (*Pavoncella pugnax* L.), standing in the middle of a grass field, at some distance from me. One, probably the male bird, was considerably larger than a Redshank; the other two, which I took to be females, were about the same size, or a very little larger, than that bird. The apparent male, observed through my field-glasses, had a black head and chest, with a curious square look about the former before the eyes, just about the base of the beak; the back was dark reddish-brown; the sides grayer, and the belly white, or at anyrate lightish. The two smaller birds were much grayer, also dark about the head, with lighter backs and whitish bellies. They would not allow me to get any nearer, and flew away when I approached, but still remained in company and pitched in the Great Marsh, two or three fields away, where I afterwards fancied I saw them through the glasses, dancing and jumping upon the ground. Of this last circumstance, however, I cannot be certain.

In flight the larger size of the one bird was very apparent. The wings were carried much like those of a Redshank, and showed a good deal of white, as a Redshank's wings do, but it was not nearly so *bright* a white, and the whole plumage was conspicuously darker than that of a Redshank.

I mentioned the circumstance of my having seen such birds to Mr. Burton, of Highfield, Gainsborough, who passed on my note to Mr. Caton Haigh. I felt a certain amount of doubt as to the correctness of my theory owing to the apparent absence of any ruff or collar from the neck of the male bird. Mr. Caton Haigh's reply, however, served to dissipate my last hesitation, and determined me in my resolution to send a record of such interest to 'The Naturalist.' He wrote: 'I think Miss Anderson is undoubtedly right in her surmise as to the identity of the birds seen by her. The male bird had probably not completed his ruff at the time.' He added: 'Mr. Peacock informs me that they still attempt to breed on Scotter Common.'

I may add that on Tuesday, 29th April, I again walked down into the Marshes with Mr. Burton, but did not again see our visitants, a fact which seems to be still further in favour of the correctness of my theory. On the way back to the house on this latter occasion we noticed a party of eight Fieldfares. This is the latest date on which I have recorded the appearance of these birds, with the exception of a note which I have recording their stay so late as the 2nd May 1899.—Margaret L. Anderson, Lea Hall, Gainsborough, 5th May 1902.

LINCOLNSHIRE RAMBLE
IN SEARCH OF *CLAUSILIA ROLPHII.*

C. S. CARTER,

Honorary Curator of the Museum of the Louth Antiquarian and Naturalists' Society, Louth, Lincolnshire.

At the end of April 1901 Mr. J. W. Taylor, F.L.S., and Mr. W. Denison Roebuck, F.L.S., joined some of their Lincolnshire fellow-workers—the Rev. E. A. Woodruffe Peacock, F.L.S., F.G.S., and Mr. F. M. Burton, F.L.S., F.G.S.—in making investigations in the neighbourhood of Gainsborough. Thence they proceeded to Louth, where I had the pleasure of meeting them in company with Mr. H. Wallis Kew, F.Z.S., who was also visiting the county; and of submitting to Mr. Taylor a very widely scalariform monstrosity of *Helix rotundata* which I had previously found in a living state at North Reston, near Louth,[1] and which monstrosity he pronounced to be extremely unusual.

On the 1st May we visited several of the delightful woods which flank the wolds southward of Louth, our principal object being to search for *Clausilia rolphii,* for which Mr. Kew had, in 1887, discovered three habitats in this neighbourhood. This notable mollusc, which was formerly supposed to be restricted in Britain to the South of England, has in this island a very discontinuous and local distribution; and its discovery in Lincolnshire—far removed from its previously known range—was of considerable interest to conchologists.[2] Indeed, Mr. Roebuck, in his admirable 'Materials towards a List of the Land and Fresh-water Mollusca of Lincolnshire (1887),' stated that the record of this species was the most important and significant fact which his paper contained—important inasmuch as this new locality was so far distant from the very few English counties which the species had hitherto been known to inhabit and much further north than any one of them, and significant as showing the possibilities of a county which had been so little worked as Lincolnshire.[3] The places in which the animal was found are

[1] C. S. Carter, *Helix rotundata* m. *scalariforme,* Science Gossip, 1900, N.S., Vol. 7, p. 96.

[2] J. W. Taylor, Discovery of *Clausilia rolphii* in North Lincolnshire, Journal of Conchology, 1887, Vol. 5, p. 220.

[3] W. Denison Roebuck, Materials towards a List of the Land and Fresh-water Mollusca of Lincolnshire, Naturalist, 1887, pp. 245-277.

three old oak woods, viz., Maltby Wood, Haugham Pasture, and Burwell Wood, and though not very close together are all in the same neighbourhood, on the eastern flank of the wolds; in some parts the chalk is slightly covered with clay, but it is interesting to note that the three localities for the shell are in the same long post-glacial ravine, where the surface is chalk. This ravine is the most important of the post-glacial excavations of the immediate neighbourhood, and is described in detail by Mr. Jukes-Browne in his Geological Survey Memoir of 1887. The principal channel commences, he says, at the south corner of Burwell Wood and runs N.W. to Haugham Wood, where it receives two tributaries. The valley bottom is flat, but not level, having shallow depressions or basins where rushes grow, and which are, doubtless, hollows of solution or swallow-holes. At the S.W. corner of Haugham Wood there is a curious bulge in the valley, forming a kind of cul de sac with an oblong swallow-hole in the centre; it succeeds a very sharp bend in the valley, and has evidently been formed by the forcible rush of water in times of flood. In Haugham Pasture the channel takes a sharp horse-shoe bend, and here there is a large pond, probably marking the site of a swallow-hole. The ravine then runs north-east to Cawthorpe.[4] This ravine is, I understand, the most northerly locality in Britain in which *Clausilia rolphii* has yet been found.

Passing by Jenney Wood, we paused to examine a keeper's tree—an oak—from whose branches hung two Polecats, several Weasels, a Hedgehog, a Kestrel, a Sparrowhawk, a Jay, a Magpie, etc. On some of these victims we observed in considerable numbers the well-known beetle *Dermestes murinus*. Continuing our walk we arrived at the border of Maltby Wood, and found ourselves in the field known to some Louth naturalists as the 'Botanists' Meadow,' but more commonly called the 'Greasy Field,' from the fact that this is the only local habitat for the 'Greasy Fritillary' (*Melitæa artemis*). Here, amongst long dry herbage of the previous season, *Anemone nemorosa* raised innumerable delicate blossoms to the May-day sun, and the whole scene was one of indescribable loveliness. The charm was enhanced by the notes of the cuckoo, the green woodpecker, the melodious voices of the lark and other songsters. Here, too, was the charming pink of the little Lousewort (*Pedicularis sylvatica*); and the 'Oxlip'—not the true *Primula elatior*,

[4] A. J. Jukes-Browne, Geology of East Lincolnshire, Geological Survey Memoir, 1887, p. 125.

however, but the cowslip-primrose or hybrid between *Primula veris* and *Primula vulgaris*. In this field our entomologists find, besides the Greasy Fritillary, several interesting Lepidoptera, amongst them being the Burnet Noctua (*Euclidia glyphica*) and the Mother Shipton (*Euclidia mi*). The local Tansy Beetle (*Adimonia tanaceti*) is also found here, and its little blackish larvæ may be seen later in the year feeding on the leaves of the Devil's-bit-Scabions.

Keeping to the border of Maltby Wood, along the road leading from Little Cawthorpe to Haugham, we entered the somewhat shallow ravine above mentioned. At the extreme corner of the wood is a small long-disused pit, into which we turned, and this with some eagerness, for we had now arrived at one of the known habitats of *Clausilia rolphii*. Turning over pieces of chalk and logs of wood, we speedily found the mollusc in a living state, but not in great numbers. Besides this species we found *C. laminata*, *C. bidentata*, *Helix hortensis* var. *lutea* ooooo, *H. rotundata*, *H. aculeata*, *H. hispida*, *Hyalinia alliaria*, *Hy. crystallina*, *Hy. fulva*, *Cochlicopa lubrica*, *Buliminus obscurus*, *Carychium minimum*; and of slugs, *Arion ater* (young only), *A. hortensis*, *A. circumscriptus*, *Agriolimax agrestis*, and *A. lævis*. Of beetles we found *Chrysomela polita* and *Barynotus obscurus*. The characteristic plant was the Broad-leaved Garlic (*Allium ursinum*), which was just beginning to show buds. On leaving this place—as the time at our disposal would not permit us to visit Haugham Pasture—we crossed the fields to the Haugham and Burwell Woods, whose margins were gay with primroses, cowslips, wild hyacinths, and anemones, the last varying in shade from white to crimson.

In an adjoining field I found a very good neolithic flint flake. We now re-entered the long winding ravine, which is here a considerable valley, running along the border and within the confines of Burwell Wood, and known as Grisel Bottom. This was also one of the places in which we were to look for *Clausilia rolphii*, and in which, moreover, we had the good fortune to refind it. In this place we also found *C. laminata*, *C. bidentata*, *Helix nemoralis*, *H. hortensis* (a few dead specimens), *H. arbustorum*, *H. rotundata*, *H. lapicida* (one dead specimen—an interesting find as only two examples had previously been found in the Louth district, and these some years ago by Mr. Kew), *Hyalinia cellaria*, *H. alliaria*, *Buliminus obscurus*, *Carychium minimum*, *Cyclostoma elegans*, *Arion ater* (young only), *A. hortensis*, *A. circumscriptus*, *A. minimus*, and *Agriolimax agrestis*.

Mr. Roebuck dredged a shallow pond and found *Aplexa hypnorum*, *Planorbis nautileus*, and *Pisidium pusillum*.

It may be of interest to mention that this wood was once part of the possessions of the father of the celebrated Martin Lister, whom we rightly regard as one of the pioneers of natural history observations.[5] Being pre-Linnean, this eminent man had not the advantage of the bi-nominal designations with which we are now so familiar. In referring to the mollusc we now call *Cyclostoma elegans*, for instance, he wrote in his 'Historiæ Animalium Angliæ,' 1678: *Cochlea cinerea, interdum leviter rufescens, striata, operculo testaceo*, and for our *Hyalinia fulva*, *Buccinum parvum sive Trochilus sylvaticus agri Lincolniensis*. He records the occurrence of both these animals in Burwell Woods, in which place both were re-discovered—more than 200 years afterwards—in 1886-7.[6] Lister also describes our *Helix lapicida* under the title of *Cochlea pulla, sylvatica spiris in aciem depressis*, and says that it is an elegant and rare shell, and that he found it in the woods of Lincolnshire.

In Grisel Bottom we found a six-leaved specimen of Herb-paris (*Paris quadrifolia*) in bloom; and I gathered the Tooth-wort (*Lathræa squamaria*), which was of special interest, as it had not been previously recorded for the district. The day after our ramble, Mr. Kew, in these same woods, re-found an interesting little acquaintance of a former year—the land-planarian (*Rhynchodemus terrestris*), the only native representative in these Islands of the terrestrial planarian worms.

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[5] R. W. Goulding, Martin Lister, Lincolnshire Archæological and Architectural Society Report, 1900, Vol. 25, p. 339.

[6] H. W. Kew, *Cyclostoma elegans* re-discovered in North Lincolnshire, Naturalist, 1886, p. 347; H. W. Kew, *Zonites fulvus* re-discovered in its ancient locality in Lincolnshire, 'Journal of Conchology,' 1887, Vol. 5, p. 199.

NOTE on MOLLUSCA.

New Locality for *Clausilia rolphii* in Lincolnshire.—On 11th May, when passing the chalk pit once famous for Marbled White Butterflies, by the side of London Road, near Kenwick Bar, I went in, began turning over lumps of chalk, etc. Under one lump I found a fine specimen of *Clausilia rolphii*, and another under a piece of wood. This pit is about a mile north-west from the nearest locality, Maltby Wood, where this species has previously been found. Besides *Cl. rolphii* I found *Arion ater*, *A. minimus*, *Agriolimax agrestis*, *Hyalinia cellaria*, *H. alliaria*, *Helix rotundata*, *H. hispida*, *H. pulchella* v. *costata*, and *Cochlicopa lubrica*.—C. S. Carter, 8, Bridge Street, Louth, 12th May 1902.

Naturalist,

MOSSES OF POOL, YORKSHIRE.

GEORGE B. SAVERY,
Silverton, Exeter; formerly of Pool, Yorkshire.

THE district from which the following mosses were collected comprises the Wharfe Valley from Farnley to Harewood, the Washburn Valley as far as Norwood, and the higher ground round Almias Cliff and Adel Bog. The mosses were gathered at various times from 1899 to 1901.

The whole district is on the Millstone Grit, and is unfortunately much polluted by smoke: the result of this has been to practically annihilate the more delicate mosses. For example, the genus *Weissia* Ehrh. is totally wanting, and *Orthotrichum* is only represented by *O. diaphanum* and a few stunted specimens of *O. affine*. The old moss-flora of Adel Bog seems to be going in the same way as the Phanerogams have gone. *Bryum Duvalii* Voit. is the only interesting discovery there. Almias Cliff still retains a few montane forms, but in a stunted condition. A fair number of moorland mosses were collected from the peat at Norwood. From the Wharfe the most interesting moss was *Fissidens rufulus*. Previous records for this district are very few, but of them only one or two have been confirmed. The majority of the mosses have been collected by my brother, Mr. F. Savery.

The more critical species have been kindly named for me by various more experienced bryologists. The names used are those of Dr. Braithwaite's 'British Moss Flora,' but, as that work is not completed, the remainder are taken from Mr. C. P. Hobkirk's 'Synopsis,' Edition II.

Georgia pellucida (L.) Rabenh. Creskeld.
Catharinea undulata (Web.) Mohr. Common.
Polytrichum aloides Hedw. Common.
Polytrichum piliferum Schreb. Leathley and Lindley Wood.
Polytrichum juniperinum Willd. Almias Cliff.
Polytrichum commune L. Common but sterile.
Fissidens viridulus (Swartz.) Wahl. Castley.
Fissidens incurvus Starke. Castley and Leathley.
Fissidens bryoides (L.) Hedw. Common.
Fissidens fontanus Schimp. Wharfe bank at Castley (teste C. P. Hobkirk).

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Fissidens rufulus Schimp. Wharfe bank at Castley (teste C. P. Hobkirk and R. Braithwaite).

Fissidens taxifolius (L.) Hedw. Common.

Pleuridium axillare (Dicks.) Lindb. Farnley Fish-pond.

Pleuridium subulatum (L.) Rabenh. Pool Bank and Leathley.

Pleuridium alternifolium (Kaulf.) Rabenh. Castley.

Dicranella heteromalla (Dill.) Sch. Common.

Dicranella cerviculata (Hedw.) Sch. Norwood.

Anisothecium rubrum (Huds.) Lindb. Lindley Wood and Arthington.

Anisothecium rufescens (Dicks.) Lindb. Stainburn.

Campylopus pyriformis (Schultz.) Brid. Norwood, c.fr.

Campylopus fragilis (Dicks.) Br.&Sch. Norwood, c.fr.

Campylopus flexuosus (L.) Brid. Pool Bank and Norwood.

Dicranoweissia cirrata (L.) Lindb. Common.

Dicranum scoparium (L.) Hedw. Common but sterile.

Dicranum Bonjeani DeNot. Leathley and Norwood.

Dichodontium pellucidum (L.) Sch. The Washburn and Riffa Beck at Stainburn.

Dichodontium flavescens (Dicks.) Lindb. Farnley and the Riffa Beck at Stainburn.

Oncophorus striatus (Schrad.) Lindb. Norwood.

Ceratodon purpureus (L.) Brid. Very common.

Phascum acaulon L. Common.

Pottia truncatula (L.) Lindb. Common.

Pottia lanceolata (Hedw.) C.M. Castley.

Pottia Starkei (Hedw.) C.M. var. ***Davallii*** Sm. Arthington.

Tortula aloides (Koch) DeNot. Castley.

Tortula muralis (L.) Hedw. Very common.

Tortula subulata (L.) Hedw. Common.

Tortula mutica Lindb. Wharfe banks at Castley and Arthington.

Tortula montana (Nees.) Lindb. Stainburn.

Tortula ruralis (L.) Ehrh. Stainburn and Castley.

Mollia viridula (L.) Lindb. Very common.

Mollia tenuirostris (Hk.&T.) Lindb. Norwood.

Leptodontium flexifolium (Dicks.) Hampe. Almias Cliff and Norwood.

Barbula rubella (Hoffm.) Mitt. Common.

Barbula lurida (Hsch.) Lindb. Common on the Wharfe banks (teste C. P. Hobkirk).

Barbula brevifolia (Dicks.) Lindb. Pool, c.fr. (teste C. P. Hobkirk).

Barbula fallax Hedw. Almias Cliff and Bramhope, c.fr.

Barbula spadicea Mitt. Pool, c.fr.

Barbula rigidula (Hedw.) Mitt. Castley.

Barbula cylindrica (Tayl.) Sch. Common but sterile.

Barbula Hornschuchii Schultz. Adel and Leathley (teste W. Ingham).

Barbula convoluta Hedw. Common.

Barbula unguiculata (Huds.) Hedw. Common.

Cinclidotus fontinaloides (Hedw.) P.B. In the Wharfe.

Leersia contorta (Wulf.) Lindb. Common.

Grimmia apocarpa (L.) Hedw. Leathley and Castley.

Grimmia apocarpa (L.) Hedw. var. ***rivularis*** (Brid.) W.M. Common in the Wharfe.

Grimmia pulvinata (L.) Sm. Common.

Grimmia trichophylla Grev. Almias Cliff.

Grimmia obtusa (Sm.) Lindb. Almias Cliff (teste C. P. Hobkirk).

Grimmia heterosticha (Hedw.) C.M. Almias Cliff.

Grimmia acicularis (L.) C.M. Stainburn and Almias Cliff.

Grimmia fascicularis (Schrad.) C.M. Lindley Wood.

Glyphomitrium polyphyllum (Dicks.) Mitt. Almias Cliff.

Orthotrichum affine Schrad. Wharfe bank at Castley.

Orthotrichum diaphanum Schrad. Castley.

Discelium nudum (Dicks.) Brid. Bank of the Washburn at Farnley.

Physcomitrium pyriforme (L.) Brid. Leathley.

Funaria hygrometrica (L.) Sibth. Common.

Leptobryum pyriforme (L.) Wils. On brickwork at Pool.

Pohlia nutans (Schreb.) Lindb. Common.

Pohlia carnea (L.) Lindb. Wharfe bank at Arthington, c.fr.

Pohlia albicans (Wahl.) Lindb. Common but sterile.

Bryum inclinatum (S.W.) Bland. Farnley.

Bryum pendulum (Hsch.) Schimp. Farnley.

Bryum intermedium Brid. Pool.

Bryum cæspiticium L. Common.

Bryum argenteum L. Common.

Bryum bicolor (Dicks.) Leathley and Arthington.

Bryum pallens Sw. Lindley Wood, c.fr.

Bryum Duvalii Voit. Adel Bog (teste C. P. Hobkirk and R. Braithwaite).

Bryum ventricosum Dicks. Farnley, Leathley and Norwood

Bryum capillare L. Very common.

Bartramia pomiformis (L.) Hedw. Bramhope and Stainburn.

Philonotis fontana (L.) Brid. Lindley Wood and Stainburn.

Gymnocybe palustris (L.) Fries. Norwood.

Gymnocybe palustris var. ***imbricata*** (B.&S.) Lindb. Norwood (teste R. Braithwaite).

Gymnocybe palustris var. ***fascicularis*** (Brid.) Lindb. Adel.

Orthopyxis androgyna (L.) P.B. Stainburn and Weeton.

Mnium marginatum (Dicks.) P.B. Castley.

Mnium hornum (L). Very common.

Mnium silvaticum Lindb. Bramhope.

Mnium cuspidatum (L.) Neck. Almias Cliff.

Mnium undulatum L. Common.

Mnium rostratum Schrad. Common.

Mnium stellare Reich. Castley.

Mnium pseudopunctatum B.&S. Norwood, c.fr.

Mnium punctatum L. Common.

Thuidium tamariscifolium (Neck.) Lindb. Common.

Leskea polycarpa Ehr. Common by the Wharfe.

Amblystegium filicinum (L.) DeNot. Common.

Amblystegium fluviatile (Swartz.) Schimp. In the Wharfe at Castley.

Amblystegium serpens (L.) Br.&Sch. Very common.

Amblystegium riparium (L.) Br.&Sch. Weeton and Farnley.

Amblystegium riparium var. ***longifolium*** Schultz. Weeton (teste C. P. Hobkirk).

Amblystegium glaucum (Lam.) Lindb. Castley.

Amblystegium aduncum (L.) Lindb. Almias Cliff; Lindley Wood, and Adel Bog, c.fr.

Amblystegium fluitans (L.) DeNot. Castley.

Amblystegium Kneiffii Schimp. Farnley Fish Pond.

Amblystegium palustre (Huds.) Lindb. Common.

Amblystegium stramineum (Dicks.) DeNot. Norwood.

Hypnum purum L. Common.

Hypnum striatum Schreb. Norwood.

Hypnum prælongum L. Common.

Hypnum Swartzii Turn. Castley.

Hypnum crassinerve Tayl. Bank of the Wharfe at Castley.

Hypnum piliferum Schreb. Bramhope and Castley.

Hypnum rusciforme Neck. Common.

Hypnum murale Neck. Arthington and Castley.

Hypnum confertum (Dicks.) Br.&Sch. Common.

Hypnum velutinum L. Common.

Hypnum pseudoplumosum Brid. In the Washburn and Riffa Beck.

Hypnum viride Lamk. Leathley and Castley.

Hypnum rutabulum L. Very common.

Hypnum rivulare Bruch. Common.

Hypnum sericeum L. Common.

Isothecium myosuroides (L.) Brid. Leathley.

Isothecium viviparum (Neck.) Lindb. Weeton.

Climacium dendroides W.&M. Adel Bog.

Rhynchostegium depressum Bruch. Farnley and Castley (teste W. Ingham).

Plagiothecium denticulatum L. Common.

Plagiothecium Borrerianum Spruce. Farnley, Almias Cliff and Bramhope.

Plagiothecium undulatum L. Almias Cliff and Pool Bank.

Hypnum cupressiforme Dill. Very common.

Hypnum resupinatum Wils. Castley and Stainburn.

Hypnum cuspidatum L. Common. Leathley, c.fr.

Hypnum Schreberi Willd. Pool Bank and Almias Cliff.

Hylocomium splendens Hedw. Leathley and Almias Cliff.

Hylocomium squarrosum L. Common.

Hylocomium triquetrum L. Weeton.

Fontinalis antipyretica L. Common.

Neckera complanata L. Harewood.

Thamnium alopecurum L. Common.

Sphagnum cymbifolium Ehr. Norwood.

Sphagnum subsecundum Nees. Norwood.

Sphagnum subsecundum var. ***contortum***. Norwood and Adel.

Sphagnum acutifolium Ehr. Norwood.

Sphagnum cuspidatum Ehr. Norwood and Adel.

NOTE on DERBYSHIRE MOSSES.

Two Probably Erroneous Moss Records for Derbyshire.—(1) *Hypnum Sendtneri* Schimp. was inserted in Whitehead's North Derbyshire Mosses, but was afterwards erased in Mr. Whitehead's private copy, because he found that the specimen on which he relied had been wrongly named. The record in Mr. Painter's List is copied from Whitehead's List. The record in Mr. Wheldon's paper in the March 'Naturalist' is in part Whitehead's, but in addition gives 'Carr Meadow (57) Holt,' and, unless this last be found to be reliable, the record for Derbyshire must be cancelled.

(2) *Trichostomum inclinatum* Dixon (*Barbula inclinata* Schwg.) is recorded in Mr. Painter's List of Derbyshire Mosses 'Staddon Heights, Holmes, 1867, in Braithwaite.' Mr. Holmes' station is near Plymouth, and, so far as I know, this species has not yet been found in Derbyshire.—T. Barker, Whaley Bridge, 14th April 1902.

NOTES on YORKSHIRE PLANTS.

East Yorkshire Plant Notes.—I do not know the neighbourhood of Scarborough at all well, and only send you these notes in case you think them of any value. My sister showed me on the 16th specimens of *Equisetum maximum* and *Stellaria Holostea* from near Fyling Dales, Robin Hood's Bay. The petals of the latter plant were not cut and divided in the usual way. Otherwise the specimen was normal.—E. Adrian Woodruffe-Peacock, 19th May 1902.

***Acer campestre* in North Yorkshire in 1702.**—Bishop Nicolson in his diary, 23rd May 1702 (see Trans. Cumb. and Westm. Antiq. and Archæol. Soc., New Series, Vol. 2, 1902, p. 156), writes that he saw '*Acer minus* abundantly in the hedges.' Apparently the locality was somewhere about what he calls 'Thornton Bridge,' for in the next paragraph he goes on to say 'That night to York.' Mr. J. G. Baker, in the second edition of his 'North Yorkshire' (Trans. Yorks. Nat. Union, Pt. 15, p. 276), has 'Area general . . . Frequent in woods and hedges,' etc.—S. L. Petty, Ulverston, 20th May 1902.

Ivy Berries and Blackbirds.—Miss M. Fowler writing from Liphook, Hampshire, says:—'Look at the enclosed seeds. I am much interested in them. This is their history. The Blackbirds especially, but also the Thrushes, are just now eating great quantities of Ivy (*Hedera Helix*) berries. They swallow the berry whole and then later on throw up the seeds, nicely cleaned from the pulp. The garden is covered with the enclosed seeds. Here, however, is the strange part of the observation. The natural colour of the seed skin is white, with a shade of cream, turning slightly more yellow in drying—whereas nearly all the thrown-up seeds have the skin of this pretty red.' I should call them rose-pink unless they have faded. 'I suppose the digestive juices of the birds act on the skin of the seed and produce this change of colour. No book I have goes further than saying that the birds eat the ivy berries during the late winter.' I should very much like to know whether anyone has observed this change of colour in 'The Naturalist's' district of England.—E. Adrian Woodruffe-Peacock, Cadney, Brigg, 19th May 1902.

BULBIFEROUS FORMS OF *WEBERA ANNOTINA*.

T. BARKER,
Whaley Bridge.

Prof. Correns (Untersuchungen über die Vermehrung der Laubmoose etc.), after studying these forms and the development of the bulbils, has established out of them four species, viz. :—

(1) *Webera erecta* (Roth) Correns.
(2) *Webera proligera* Lindb.
(3) *Webera annotina* Hedw. Emend.
(4) *Webera bulbifera* (Warnst.) Correns.

The variety of form of the bulbils is noticed, so far as I have observed, in the 'Student's Handbook' only—'in the axils of the leaves, small reddish, leafy bulbils, or crowded green foliaceous, 2-3 pointed gemmæ.' The descriptions elsewhere appear to refer to (1) only.

These forms all occur in this part of Derbyshire (near Whaley Bridge), and except perhaps (4) are fairly common, indeed (2) is abundant; I cannot, however, find any information as to their occurrence and distribution in this country; and the object of this brief note will have been attained if it serves to direct the attention of bryologists to these forms, and to the very interesting work of Prof. Correns.

A few short notes may facilitate the recognition of these forms, and may serve as a 'key' to them, but for full details the work just referred to must be consulted.

(1). ***Webera erecta.*** Bulbils roundish ovate with slightly tapering ends, green when young, brown when ripe, occurring *singly* in a *few* leaf axils about the *middle* of the stem, the foliaceous points being rather widely triangular. The containing leaves diverge more widely than the others which are erect. The plant occurs in rather compact yellowish green, somewhat glossy, little patches, in gritty rainwater channels on old roads.

(2). ***Webera proligera.*** Bulbils *long, narrow,* slightly widening from base to apex, green, with longer, narrower foliaceous points, *very numerous* along the *upper half* of the stem *up to the apex,* giving to the stem a sort of bottle-brush appearance under the lens. Plant in habit and leaf similar to (1); in similar

situations, and also abundantly on moist decaying gritstone rocks. There is also a slender laxly tufted form on damp sides of brooks, very similar to (3) in habit.

(3). ***Webera annotina.*** Bulbils *shorter* and much *thicker* than in (2), *resembling in shape* those of (1), but smaller, green, *several, up to about 6,* to each leaf along the *greater part* of the stem. Plant slenderer, paler green in colour, in lax patches; leaves smaller, more distant, and more spreading in comparison with (1) and (2). It grows in moist situations on the sloping sides of old roads and ditches.

(4). ***Webera bulbifera.*** In habit and situation, and in the position and number of the bulbils resembling (3); the bulbils themselves, however, being *quite different.* In shape they are like a *roundish egg* attached by the narrower end, the *upper half* being an *empty hollow space,* which is *arched over* by valves (foliaceous points), with their edges in close contact. If the bulbils be dried and then moistened again, the contained air is not at once expelled, and the shape of the cavity is easily seen.

The bulbils are to be found during summer and autumn, and perhaps at other seasons. Although they vary somewhat, their distinctive characters seem well maintained. In all these forms the leaves seem to be longly and narrowly decurrent, and in (1) and usually in (2) they are larger and more erect, and have more of the margin recurved than in (3) and (4). I do not know how these forms are related to the varr. *angustifolia* and *tenuifolia* of the 'Student's Handbook,' as I have no authentic specimens for comparison.

NOTE on LINCOLNSHIRE ALGÆ.

Diatoms taken at Clee, Lincolnshire.—Mr. A. Smith, of Grimsby, sent me the following list of diatoms taken by him at Clee (Div. 4) 23rd March 1902:—

Meridion circulare.
Synedra ulna.
Synedra ulna var. *vitrea.*
Synedra acus.
Nitzschia linearis var. *tenuis.*
Nitzchia paradoxa.
Surirella ovalis var. *angusta.*
Amphora angusta.
Navicula cryptocephala var. *exilis.*
Fragilaria hyalina.
Pleurosigma Spencerii.
Pleurosigma acuminatum.
Pleurosigma attenuatum.
Mastogloia Smithii.
Rhabdonema arcuatum.
Nitzschia sigmoidea.
Rhoicosphenia curvula.
Navicula didyma.
Cymatopleura solea.
Diatoma elongatum.
Navicula viridis.

—S. C. Stow, Court Leys, Brandon, Grantham, 30th April 1902.

Naturalist,

THE BIRDS OF RYDAL.

Miss MARY L. ARMITT,
Rydal, Westmorland.

The parish of Rydal contains 3,020 acres. Its mountainous character is evident from the one fact alone, that within this small area lie the summit of a mountain nearly 3,000 feet high and a lake only 180 feet above sea-level. It is drained by the river Rothay, flowing through its main valley, and by the Rydal Beck, a considerable stream rising within its boundaries, which joins the Rothay below Smithy Bridge. Its boundaries follow in general the sky-line of the heights which hem in its lake and its streams. A line ruled along the rugged and much deflected summits of Loughrigg, rising to a general altitude of 1,000 feet, represents its boundary to the south. Where the mass of Loughrigg falls to the dip of Red Bank (which alone separates it from the neighbour-height of Silver How), the boundary cuts down in an arbitrary and almost straight line to the shore of Grasmere Lake; it follows the shore downwards—passing the exit of the river Rothay from the lake-foot—and completely round the lower end of the lake, till it reaches the grounds of the Prince of Wales Hotel. Thence it turns, after crossing the high-road, along a wall within the grounds of How Foot that borders the drive, and so reaches the older, higher road between Rydal and Grasmere. This it follows upward, mounting with a still higher and older road till the summit is reached at White Moss Tarn, believed by some to be the scene of Wordsworth's Leech-gatherer, and now a tame, domestic duck-pond.* Thence, leaving all tracks, it strikes up the rough fell-side to Dunny Beck, a small stream draining the back of Nab Scar. With the beck it rises and curves round the Scar, till, leaving the source behind, it reaches the bold height of Lord Crag, 1,500 feet high. Thence it follows the summits of those heights that form so remarkable an amphitheatre round the upland valley of Rydal Head (or Fairfield basin), touching as it runs northward Heron Crag (2,000 feet), Great Rigg (2,500 feet), and stopping a little short of the actual summit of Fairfield (2,862 feet). At this point it meets the boundary of Barton parish, and turning with it follows the sky-line still, but now southward and downward (though with little drop at first) to

* A reedy pool lower down also claims this honour, and more fitly.

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Hart Crag (2,598 feet), and still on, after the Barton boundary strikes away to skirt Scandale, along the gradually lessening heights to High Pike (2,155 feet), to Low Pike (1,656 feet), until, with the shoulder of the fell, it drops abruptly to the main valley of the Rothay. Before reaching the floor of the valley it joins company with Scandale Beck; with this it crosses the highway at Scandale Bridge, and the flat meadows of the bottom, till it reaches the Rothay itself. The boundary should now keep with the river, but in actual fact does not. A wide deflecting curve is made by it about the meadows towards the new church of Ambleside and Cross Syke. And this curve represents the old course of the river, for which a shorter and artificial channel was cut some time back; so that it may be said that the river has left the boundary, rather than the boundary the river. It regains the river just past the grounds of Miller Bridge, follows it to the house called Gilbert Scar Foot, and thence strikes straight up Gilbert Scar, to reach the heights of Loughrigg: and so completes its circuit in some fourteen miles.

The area thus circumscribed falls into three natural divisions: (1) A mountain basin which holds Rydal-water, the smallest mere of the country, scarcely over a mile long and a quarter broad. It was described by Hawthorne as a flood in a field, and yet it possesses in miniature every property of a true glacial lake, in sloping rocky shores, wooded islands, and rocky islets. And small as it is, the mountain basin that holds it is no larger. The water brims to the slopes, and Loughrigg and Nab Scar rise at either hand without a perch of flat meadow between; while the scant pasture and meadow land of this division has altogether an Alpine character, on steep, thin-soiled inclines. The Rothay, flowing into the lake from Grasmere, rounds the projecting arm of Whitemoss by a rough little pass at full speed; then, slackening speed as it enters the lake, forms a very small marsh at the head. On leaving the lake it again finds but a narrow passage, and rounds the outstanding spur of Loughrigg in rapids, leaving the mere shut in completely.

(2) The second natural division embraces the rise and course of the Rydal Beck up to its union with the Rothay. The stream is enclosed by the amphitheatre of heights enumerated above, and—their wild and desolate slopes rising sheer above it—forms as typical an Alpine valley as Lakeland possesses. Springs supply its source, and intermittent rills that flow down the northern face of Fairfield, often crowned with snow; it starts

fairly at a level of 1,500 feet, and pursues a tolerably level course on a valley bottom that drops imperceptibly till it reaches a point almost parallel with Lord Crag on one hand and Low Pike on the other. Here it meets with a wall of rock that lies right across its path—a massive, pyramidical wall, not high, but even and smooth and regular as a breakwater made of concrete. No better instance of the action of ice in a former age can be offered than this wall of rock, ground and polished to an even height by the glacier that no doubt once filled the valley and poured its volume downward and over the obstacle with irresistible force. Now the little stream turns sharp against the wall and runs behind it, till it finds the crack itself has worn at flood-times or when perhaps at a higher level than now. And by this it flings itself over the wall in a long fall, to settle at the base in a deep pool known to natives by the strange name of Buckstones Jam. Once beyond this natural lock, that has kept its level high, the beck knows no quietude, but leaps down the sloping screen that shuts off Rydal Head from the Rothay valley in a series of waterfalls that are among the shows of the county.

(3) When Rydal Beck has entered the Rothay, the last naturaldivision of our parish is reached. This division consists of a flat and fertile valley bottom, enclosed on three sides by moderate heights. Cut off completely from Rydal Water, it seems to form a basin, filled in with alluvial matter, to itself. But it is in fact only the head of the Windermere basin; and the great lake, shut off by rocky knolls, is at present only half a mile beyond our boundary limit, while once, no doubt, it reached further up the flat. This valley bottom, formerly a marsh, has been carefully drained by the farmer, and its water-channels walled and guarded; and it forms the only deep arable land of the parish. Its smooth, green surface is diversified by hummocks of rock that stud it like islands; and once maybe they were islands in the wide stream of ice that has ground their up-valley sides into pyramidal and smooth contours, and left their down-valley sides sharp and broken. All of them are crowned with trees, remnants of a forest that was older than the age of man's settlement and his careful tillage of the soil.

[In compiling the following list, I have received the generous aid of all who had information at their disposal; but it undoubtedly suffers from the fact that it is based on a short experience only. Mr. Wykeham-Martin, who has kindly sent me notes, left the parish, after a seven years' residence, in 1896,

1902 July 1.

when I came to it. Mr. H. E. Rawson, of Windermere, who has also kindly helped, is a recognised authority for the whole of the district.] The dates refer to the first and last appearances of migratory birds, and stand not for the parish alone, but for the district.

Rook. ***Trypanocorax frugilegus*** (L.). Permanent resident. Rookery at the Hall; and a few nests are annually built on Old Hall Hill, where the former seat of the lord of the manor stood.

Raven. ***Corvus corax*** L. Seen frequently; and nested undoubtedly in 1901.

Carrion Crow. ***Corone corone*** (L.). Permanent resident. Breeds in the deepest woods or wild tracts where trees grow. I have seen several of these birds follow a Buzzard, hampering it; probably because the Buzzard occasionally takes its nest. One new-made nest of the Crows' I subsequently found occupied by Buzzards.

Jackdaw. ***Colœus monedula*** (L.). Permanent resident. Frequent; breeding in old trees and in crags, as well as in chimneys.

Jay. ***Garrulus glandarius*** (L.). Permanent resident. By no means rare, though kept down.

Magpie. ***Pica pica*** (L.). Permanent resident. Not abundant, and oftenest seen by White Moss.

Common Starling. ***Sturnus vulgaris*** L. A permanent resident; yet wandering flocks do leave the parish in the very worst of winter for flatter and fatter lands. But the return is always made by February, and no breeding species is more numerous, as it nests in the holes of woodland trees—generally taking there an old nest of some other bird—and in roof-spouts, holes of masonry, etc., in almost every house.

Greenfinch. ***Ligurinus chloris*** (L.). Summer visitant. Nests in secluded gardens and shrubberies. Arrives at the latter end of March or early in April. Leaves when the nest season is over, first for adjacent oat-fields, and then, apparently, for more distant ground. The species is seen, however, occasionally in winter, but then only as a single bird or two, in company with Mountain Finches or Chaffinches. It feeds its young on the tender green seed of the Wych Elm, which is already swelled by the middle of May. From its swarming in April over the Gorse bushes, I conclude it eats the young pods of this plant.

Naturalist.

1 JUL 1902

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Hawfinch. ***Coccothraustes coccothraustes*** (L.). According to the account given by the intelligent woodman of the estate, he appears to have found nestlings of this species, six or seven years ago, in the upper Hall gardens. He carried them to a cage in his cottage, and a parent followed them this considerable distance, remaining in a tree over against the verandah in which the cage was hung, for the few days they lived. In 1901 the fresh occupant of the same cottage saw a pair of Hawfinches constantly about, so in all probability they nested there.

Chaffinch. ***Fringilla cœlebs*** L. Permanent resident. Abundant at all times. The occasional winter flocks seen—feeding, for instance (as I discovered them to do), on the minute grubs of the Spangle-gall in a season when these are abundant—may be immigrants from other parts.

Brambling. ***Fringilla montifringilla*** L. Winter visitant. Comes in flocks, sometimes of a great size, when snow is on the ground, and the Beech harvest has been full.

Goldfinch. ***Carduelis carduelis*** (L.). It is reported not only as having nested in the neighbourhood formerly, but to have, within the memory of middle-aged men, resorted in autumn flocks to the lower pastures of Loughrigg. I have never seen it.

Lesser Redpoll. ***Cannabina rufescens*** (Vieill.). Permanent resident, in the sense that it nests in the district, though possibly not every year in this parish. It is oftenest seen in winter, either singly, keeping up with a party of Bullfinches, or in a small flock, feeding on the Alder or Birch trees. I once met quite an army, passing through the Fir-woods of the high ground between the Esthwaite and Langdale valleys.

House Sparrow. ***Passer domesticus*** (L.). Permanent resident, and abundant.

Crossbill. ***Loxia curvirostra*** L. Occasional visitant, doubtless. A flock of them remained in the fir woods of the heights round the Esthwaite valley all through the late summer and autumn of 1894. I first saw them on 10th July, 15 to 16 in number, and constantly afterwards; and was told they remained through the winter after I left.

Bullfinch. ***Pyrrhula europæa*** Vieill. Permanent resident. Most frequently seen in winter in small flocks when feeding upon the birch-seeds of the wood. But a brood or two are hatched every summer in some secluded part of the parish. A family of young birds is generally led to this garden in early July, where

they are fed on various kinds of seeds—those of the Welsh Poppy, eaten green, the Melancholy Thistle, and the small *Viola cornuta*. This bird in winter will take the driest of hard seeds, notably those of the late Blackberry flowers, that never swell to fruit; as well as Knapweed, Dock, and, I think, the dry seed of the Heather plant.

Reed Bunting. ***Emberiza schœniclus*** L. Summer visitant. Nests on the marsh at the head of the lake. Appears from the middle to end of March. 12th March 1888.

Yellow Bunting. ***Emberiza citrinella*** L. Summer visitant to this parish, where it nests in a few spots on wild land. I have never seen it here in winter, though small parties linger round the farmsteads of the upper Esthwaite valley regularly at that season.

Sky Lark. ***Alauda arvensis*** L. Summer visitant. This bird is practically absent from Lakeland, where, according to an old inhabitant, it once existed in fair numbers—a change ascribed to the lapse of old corn-lands into pasture and meadow. But it is a remarkable fact that a few pairs return each summer to nest on the summit of our mountain range. It is to be heard singing, I am told, on almost the topmost height of Fairfield; and the farmer, whose sheep range over the slopes, has found its nest towards the top of the spur called Heron Crag—marked in the Ordnance Map as Earring Crag. Its choice of this exposed position, rather than the floor of the Fairfield basin, where Meadow-Pipits have their home, is hard to understand.

Pied Wagtail. ***Motacilla lugubris*** Temm. Summer visitant. Numerous. Nests in walls and sides of barns; and is particularly fond of a ruined building. Appears in March (generally in the second or third week), and is then seen in companies upon a fresh-ploughed field or lake margin, which shortly break up into nesting pairs, but gather together again in autumn. At this time I have frequently observed it rest upon telegraph wires on which House Martins were congregating, and fly round imitatively after these birds or follow them over the lake. It sports also very prettily over the lake margins, and roosts in the reeds. Generally it withdraws in early October, but odd birds are often seen in winter. A solitary bird lived in Ambleside through the mild winter of 1895-6.

Grey Wagtail. ***Motacilla melanope*** Pall. Summer visitant. Appears on the Rothay early in March. Nests on the shores of the lake and on the streams. Withdraws in August and September, but odd birds are sometimes seen in November.

Yellow Wagtail. ***Motacilla campestris*** Gray. Summer visitant. I found the bird on 6th May 1898, on the spot where I had always looked for it—the bit of flat about the river and Dunny Beck, where they flow into the lake. The site, however, is closely hemmed in and commanded by the noisy highway, and it did not stay. It is there again this year, I am glad to say. Mr. Macpherson, in the 'Fauna of Lakeland,' conveys the impression that this bird is rare with us. It may be well, therefore, to note its stations hereabouts. All are of the same character: a flat alluvial meadow, situated at the junction of an affluent of some size with a lake. By the Troutbeck and by Burdhouse mouth, on Windermere; by the Rothay, on Grasmere; by Black Beck, on Esthwaite. The two stations I am best acquainted with are occupied year after year, and where the space is considerable by several pairs.

Tree Pipit. ***Anthus trivialis*** (L.). Summer visitant. Abundant wherever there are trees, even in the scanty fringe of those along the Rydal Beck, in the basin under Fairfield, 600 feet high; and so crowded is it on the limit of its range that while one bird may be seen in possession of the very last singing post (an old dwarf Ash) another beyond starts and concludes its aërial course of song from a wall-top or bank. It is also in the Junipers of Loughrigg. First singers heard from the 16th to 25th April. A beautiful though variable singer. Seems to sing best and most on the wing, in cold, wet seasons, while in heat and drought it keeps more to the boughs and sings in shorter strains. Nests generally in dry grass slopes, close to trees or wood. Possibly a second nester sometimes. Last seen 20th August.

Meadow Pipit. ***Anthus pratensis*** (L.). Summer visitant. This bird leaves us as regularly as the preceding species, though its method of autumnal roaming and its very occasional reappearance in a mild winter evidence a more partial migration. It comes, like the Pied Wagtail, in March, and often as a small band, but does not settle to its higher breeding-ground till quite a month later. It appears to have two characters of nesting habitat: one in the valley, upon a marsh or watery meadow; the other upon the high, bleak, and grassy slope of the mountains, where, however, a stream flows near. In the latter station it sings more freely than in the former. There is a colony of these birds in Rydal Head; and their range, bare and treeless, touches, almost overlaps, that of the Tree Pipits', which ascends to the highest bush of the vale; so that the two

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species may be heard singing together. The Tree Pipit far outnumbers it on lower ground. In autumn it collects (like the Pied Wagtail) in lively parties, and lives upon the heather uplands, where, I believe, from its actions, it eats the minute green seeds of the plant. It disappears from the heights at the end of September or early in October.

Tree Creeper. ***Certhia familiaris*** L. Permanent resident. Present in all the woods. Will undertake a second brood as soon as the young of the first are self-supporting. Has nested quite a number of times in a rustic garden summer-house.

Great Tit. ***Parus major*** L. Permanent resident. Numerous. Nests generally in sides of barns or in high walls; sometimes in holes of trees. Eats Beech-mast (beginning quite early), as does also the Coal, but not, in my experience, the Marsh Titmouse. It breaks open the Hazel-nut in winter by blows that resound through the coppice. It eats the hard, green Yew-berry, rejecting the aril; also Sunflower seed, Knapweed, and Elderberry. It breaks the marble gall, I believe, for the grub inside.

Blue Tit. ***Parus cæruleus*** L. Permanent resident. Very numerous. Nests in walls, or—when they are to be had—in small pocket-holes of trees. Searches house-fronts for spiders' eggs (possibly spiders too) in September, as does the Great Titmouse. It is not so great a fruit-eater as that bird, but will eat Laburnum seed and seed of *Arundo Phragmites,* and of Alder. I have seen the hen, in the manner of the Marsh Tit, peck at a hole of an Oak tree to enlarge it, incited by its mate.

Coal Tit. ***Parus britannicus*** S.&D. Permanent resident. General, though not so abundant as Great and Blue. Nests in low walls; very occasionally in tree-holes. Eats, besides Beech-mast, Alder and the seed of Conifers, when the woody scales have opened.

British Marsh Tit. ***Parus dresseri*** Stejn. Permanent resident. Nests invariably in rotten or pollard trees. The only bird I know that is partial to the Honeysuckle-berry; and this it feeds upon—rejecting, as Titmice do in all fruits, the juicy outside and picking at the hard seeds within—from early August right on to November, when the second crop of flowers have set their seeds in a dry, juiceless skin. It will eat the Yew-berry; and loves the Thistle seed, as well as Sweet Violet, Knapweed, and even Hogweed. In late September I have seen it apparently busy with Rhododendron seed, then in a hard, green state. It breaks up the Cherry-gall for the grub inside.

British Long-tailed Tit. ***Ægithalus vagans*** (Leach). Permanent resident. Not very numerous. It is fond of the Juniper as a nesting-place.

Common Goldcrest. ***Regulus regulus*** (L.). Permanent resident. Though in general a solitary bird, or in winter keeping up with the mixed parties of small birds that go about quiet places together, I once met a little flock of the species amongst the Juniper bushes of the fell. They prattled joyously, and even attempted to sing, though only January. The song, minute as the bird, is regularly begun about the 17th February.

Waxwing. ***Ampelis garrulus*** L. Occasional visitant. Seen several times in winter by Mr. Wykeham Martin.

Whitethroat. ***Sylvia sylvia*** (L.). Summer visitant. Nests in waste corners of gardens and low coppice-woods. In the latter station it is not infrequently the companion of the Garden Warbler.

Blackcap. ***Sylvia atricapilla*** (L.). Summer visitant. Rarer than the Garden Warbler, and hardly ever nesting in coppices as that bird does, but in shrubberies of gardens or parks. Males arrive in the latter days of April; but in general it is a late nester, nests often not being begun before early June. It is also capricious and often starts afresh. 18th April 1902; 14th September 1894.

Garden Warbler. ***Sylvia simplex*** Lath. Summer visitant. Tolerably frequent, nesting in large gardens as well as in close coppices. Is stationed in the highest woodland (about 550 feet) on the Rydal Beck, as on the Stock Beck. Arrives (as far as can be told from the song) later than the Blackcap; varying from the 4th to 15th May. Whether the cock takes part in the building of nest, as I have seen the Blackcap do, I am not sure; but I once found four collections of nest materials yet unworked, which I believed he had brought together; for he sang close by one, which caused me to find it, and seemed to be seeking a mate. The nest is placed lower than the Blackcap's.

Wood Warbler. ***Phylloscopus sibilator*** (Bechst.). Summer visitant. Fairly abundant where there are trees of large growth. Arrives about a fortnight later than the following species. Forerunners appear in the last week of April, late comers first week of May. Nests generally on rocky braes below trees, though occasionally on a bank. Feeds its young on small caterpillars as well as insects. 22nd April 1893; 1st August.

Willow Warbler. ***Phylloscopus trochilus*** (L.). Summer visitant. Abundant. Arrives by twos and threes in the second

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or third week of April. Great accession of numbers about the fourth week, when singing is general. Nests wherever there is foliage of small trees. 6th April 1893; 20th September 1894.

Chiffchaff. ***Phylloscopus minor*** (Forst.). Somewhat rare in the Lake country. It nests, however, in several woodland patches on the lower slopes of Loughrigg. One of these, by Fox Ghyll, in Rydal parish, it resorts to year after year. On 11th September I have seen and heard this bird at a spot above the Hawkshead valley where it never nests. As a friend has heard it there also in late summer, it may travel that way when migrating.

Sedge Warbler. ***Acrocephalus phragmitis*** (Bechst.). Summer visitant. Though its song is occasionally heard, in passing, at other spots, it probably nests nowhere but about the dykes of the marsh at the head of the lake. Arrives towards the end of the first week in May.

Blackbird. ***Merula merula*** (L.). Permanent resident.

Ring-Ouzel. ***Merula torquata*** (L.). Summer visitant. Nesting occasionally in Rydal Head, or on Fairfield. This species is, in fact, rare in Lakeland, where ground fruits such as belong to true moor-lands are scarce. I have seen it above Yewdale, and on Skiddaw.

Redwing. ***Turdus iliacus*** L. Winter visitant. Present in the old woods, singly or in considerable parties, when Holly, Thorn, and Ivy are fruited. I have known it appear (13th October) before the coveted harvest of Yew berries has been cleared by Throstles and other residents.

Song Thrush. ***Turdus musicus*** L. Resident, in the sense that odd birds may be occasionally seen in winter, even in times of severe frost. But the mass withdraws from these rocky lands (where no deep clay soils exist) in November. By early February they are back and beginning to sing.

Mistle Thrush. ***Turdus viscivorus*** L. Permanent resident. Is perhaps the first bird, except the Starling, to flock when the nest-season is over, and parties of 12 to 20 may be met with in early July, scouring the wilder lands for food. In winter, however, it feeds singly on the fruit of Thorn, Ivy, and Holly. The song is certain to be heard about the 22nd of January, but often begins earlier.

Fieldfare. ***Turdus pilaris*** L. Winter visitant. Erratic in its immigration, which depends—along with the length of its stay—on the quantity of food in a neighbourhood, and on the

weather. In times of snow large flocks remain wherever old Thorns and Hollies are full of berries. As I have seen Fieldfares in great numbers over a fell where Junipers were in fruit, I conclude they take this fruit likewise. No bird has a more skilfully-managed commissariat, for the feeding of large travelling armies, than the Fieldfare; two and three birds moving as scouts backwards and forwards. Its system of sentries and of signalling, too, while the main body settles to the feast, is a feature to admire. Odd parties may be seen till the latter end of April and even the 1st May. At that time, though not heard to sing (which happens presumably when they break flock on their northern nesting-ground), they show musical susceptibility. A concert of Starlings will draw them nearer, with many sounds of excitement. I have known them in large numbers, along with Starlings and Rooks, to mob a Sparrow Hawk; when the volume of sound made by Starlings and Fieldfares in concert was astonishing, and quite beyond the needs of the occasion.

Redbreast. ***Erithacus rubecula*** (L.). Permanent resident. As frequent by wood edges as in gardens. Is an occasional, though rare, fruit eater. Have seen it eat the Honeysuckle berry, peck at Crab-apples, and swallow a hard Yew berry. This it seemed to do in emulation of other and larger birds (Great Tit, Throstle, Blackbird, etc.), that were greedily devouring the fruit. I am told of it swallowing a Cotoneaster berry.

Redstart. ***Ruticilla phœnicurus*** (L.). Summer visitant. No species, whether migrant or resident, more numerous; yet so skilfully does it evade notice that few people are aware of its presence. It nests generally in walls, both of the dusty highroad and the lonely fell, as high as trees grow; occasionally in a nick of rock or quarry, or in a heap of mossy stones. Only once have I seen it in a cleft of pollarded tree. The nests are often, in spite of the extreme jealousy of the cock birds, not 120 yards distant. The date of first arrivals varies; 10th or 11th April is not unusual, though early (it was seen on the 3rd in 1893 by Mr. White, and on the 6th by myself!), and 20th April is late. The general arrival and settlement takes place in the last week of the month, when the hens appear with the later males. The song varies with the season. In some years, especially cold ones, it is rarely heard; in others, when the spring is hot, and when hens seem late in coming, it is loud and prolonged. Nesting is begun as soon as the birds are paired. The early hens pretty often start their building on the 30th, and in about

ten days' time will be ready to sit. The cock, who rarely feeds the hen, sings at this time. She comes off early and late and at noon to feed, frequently calling, as if to bring him. Indeed, the penetrating '*Hweet*' heard everywhere in the first and second weeks of May, confounded with the Chaffinch's note, seems the invitation of the hens to their mates. (This call is sometimes heard from the first arriving males while in ambush, and from the last wary travellers, who seem to be alone. In a softer tone, and followed by a Robin-like 'Tit-tit-tit-tit,' it is the well-known alarm signal of the nesting time.) The nesting operations occupy about 28 days, 14 for the sitting and 14 for the feeding-stage in the nest. The parents are highly nervous, and in quiet places often call the passer's attention by their cries of alarm. But in frequented places feeding is conducted with the utmost skill and secrecy, and it is the bird's caution as well as its speed of flight that enables its brilliance to pass unnoticed and its broods to emerge safely upon roads, like the Rydal one, noisy with traffic. In a nest close to the house, which was placed in a shadowy stable-side abutting the highway, I watched the procedure of food-getting. In order to reach the river-bank, where much of the ground food for the nestlings was collected, the birds kept first along the trees of the road bank, then they crossed the road to a garden hedge, which runs at right angles, and along this they sped swiftly to the river, practically unseen. Flies were collected nearer the nest and bits of gravel carried in. The blue eggs frequently number seven. The young often fly (possibly owing to the hen sitting before all her eggs are laid) in two instalments, and usually in the middle of June. The 24th is a late date; one noted 15th July 1899, for the flight of the two last nestlings, must have been a second venture after accident to first. The young are fed for certainly ten days after flight, and though piloted to a safe distance from the nest at once, they appear to return to its neighbourhood each night to roost for some weeks longer, as the notes of the parents attest. (The Redstart is sadly put out if one halts by his usual roosting station at dusk.) From mid June to mid July the young families remain, gathering strength. Then they leave, and Redstarts are rare by the end of the month. Odd birds, possibly passing travellers, are occasionally seen or the call-note heard at the end of August. Last heard, 8th September 1894.

Wheatear. ***Saxicola œnanthe*** (L.). Summer visitant. Nests in a few places only, on high and wild ground in Rydal Head and on Loughrigg. I have known it once to appear on

the open fell above Lake Windermere on 29th March (where indeed Mr. White saw it on the 12th) 1893; but in general it arrives on the first days of April. In the bleak valley of Rydal Head it is still later in settling.

Whinchat. ***Pratincola rubetra*** (L.). Summer visitant. The highway traffic seems to have banished this bird from the valley under Loughrigg, where it once had nesting-ground. It is now found in the wilder nooks and principally in Rydal Head, where there are several pairs. Occasionally it may be seen on 21st or 22nd April, but 30th April or 1st May are the more usual dates of its arrival.

Hedge Sparrow. ***Tharrhaleus modularis*** (L.). Permanent resident. Nests most frequently in gardens, but in wild spots also. Has two, or even three, broods. Eats minute seeds, as of the Nettle plant, Welsh Poppy, Violet.

Dipper. ***Cinclus aquaticus*** Bechst. Permanent resident. Nests on the Rothay and Rydal Beck. Starts its autumn song shortly after the Robin, generally in the first days of September, though occasionally in August. Continues until the nesting season is advanced. Pairs often in January and builds in late February and March. Is fond of the arch of a bridge to build in, to which it resorts year after year; or the face of a rock. A nest built on the rock-face opposite this garden was used afterwards by a Wren, that contracted its too-large entrance. I doubt if there are many second nests in these parts, where rivers and becks are apt to run low in the usually dry weather of early summer. The Dipper is on Rydal Mere almost a lake bird, at least in winter, when two or three are generally squirming in the shallows. There it invariably flies to the feeding spot, and drops through the water like a stone.

Wren. ***Anorthura troglodytes*** (Macg.). Permanent resident. Fairly numerous. A frequent nester, and young may fly as late as 11th September.

Spotted Flycatcher. ***Muscicapa grisola*** L. Summer visitant. Most abundant, nesting on every dwelling and outhouse, and upon the broken and ancient trees of the woodlands. Arrives generally from 9th to 11th May. 5th May 1893, 15th May 1899: 23rd September.

Pied Flycatcher. ***Ficedula atricapilla*** (L.). Summer visitant. Fairly abundant in Rydal, where the ancient trees of the estate afford it nest room. Numbers vary, as well as the nesting-ground, owing in some degree at least to other birds

following it in its nest-hole and using it in the next season. The Blue Titmouse will do this, and I believe the Great; but the Starling is the worst enemy. A patch of woodland that was literally crowded by a colony of these gentle little birds in 1895, was in April 1899, at the time of its arrival, fully possessed by Starlings, who completely occupied all the old trees. The spread of the Starling is certainly mischievous to the smaller woodland birds and likely to diminish their numbers. Single old cock birds begin to arrive from the 18th April, taking up at once their old stations, entering the old nest-hole, and singing for their mates. When the hen arrives (from three to six days later) singing abates and the two proceed to nest at once very quietly in the same hole. Later cocks arrive on the last days of the month, and through the first and even second week of May. Being probably young birds there is much more commotion while they try to procure both a mate and nest-hole; and their excitement on gaining the two is extraordinary. They fail, often, however, of one or the other, and many of the later comers appear never to establish themselves. The nest processes occupy, from the sitting of the hen to the flight of the young, 27 to 30 days; the latter period being most usual. The eggs are often seven in number, like the Redstarts. The young are fed by the parents at least eight days after flight. They then retire into the deepest seclusion and silence, and are difficult to trace. Last sight I have had of them was on 18th July; last sound, 29th July. I have twice seen pairs toy and court while they were yet feeding their nestlings, but have never known a second nest. The food of this species is much of it taken from the ground, like the Redstart. It consists of small beetles, such as the Bracken Clock (*Phyllopertha horticola*), and *Lagria hirta*; Wolf Spiders, or *Lycosæ*; as well as flies, more particularly the large-winged, slow-flying ones that come from water. An abundant greenish river-fly often taken I am unable to name. The Pied Flycatcher has the pretty habit of hanging to its nest-hole, warbling, with fanned tail. Upon excitement it lowers and raises its tail slowly; also upon excitement and fear flickers its wings high.

House Martin. ***Chelidon urbica*** (L.). Summer visitant. Not abundant. Nests on the hall and upon a few cottages.

Sand Martin. ***Clivicola riparia*** (L.). Summer visitant. Small bands in spring seem to be explorers for new nest-quarters, which are not to be had in the parish, and are rare all over Lakeland. Holes are sometimes bored in the low

alluvial bank of the river, where it flows into Windermere, but I am not sure that broods are brought off there. Another station is by Wray, in a thin patch of gravel (the *Sammel* of the district) above a small quarry.

Chimney Swallow. ***Hirundo rustica*** L. Summer visitant. Present, but not abundant, as farmsteads and rafters open to the air suitable for its nest-station are few.

Great Spotted Woodpecker. ***Dendrocopus major*** (L.). Bred regularly in the Park a few years back. Mr. H. E. Rawson has taken young from the nest there. Mr. Wykeham-Martin says, however, he never knew more than one nest in the season. The present keeper has seen the bird but once, and in winter when a pair were at work on an old tree. He shot one. I have been unable to find it myself, nor has the squire seen it for eight or more years.

Common Cuckoo. ***Cuculus canorus*** L. Summer visitant. Fairly numerous.

Common Swift. ***Cypselus apus*** (L.). Summer visitant. Has no nesting accommodation in the parish; but comes regularly from Ambleside to hawk over the river. Pushes its excursions into Rydal Head, and probably to the tops of the range.

Common Nightjar. ***Caprimulgus europæus*** L. Summer visitant. Nests on the fell slopes by a wood edge in several spots; probably drawn by *Typhœus vulgaris*, which burrows in great numbers, as well as the Dor beetle.

Common Kingfisher. ***Alcedo ispida*** L. Occasional visitant. Becoming possibly more frequent. A year ago neither the keeper nor myself had seen it within the parish. Since then it has been even seen upon the lake by myself and the woodman. Years ago it attempted to nest in the bank at Fox How, but was flooded out. It quite regularly attempts to nest about the junction of the Brathay and Rothay, beyond the parish, and sometimes succeeds, I believe.

Wood Owl. ***Syrnium aluco*** L. Permanent resident. Abundant.

The Barn Owl appears not to be present, as neither woodman nor gamekeeper have seen it. It breeds, however, in the vale of Esthwaite and in Grisedale.

Sparrow Hawk. ***Accipiter nisus*** (L.). Permanent resident. Succeeds in nesting here occasionally, though it is shot.

Common Buzzard. ***Buteo buteo*** (L.). Permanent resident. Has nested for the last few years in the parish. Its fine wild call may frequently be heard as it floats observantly above the rocky ground, or from (apparently) the last scattered trees on the precipitous Scar.

Peregrine Falcon. ***Falco peregrinus*** Tunst. Occasional visitant. The Rev. E. Reynolds, master of the foxhounds, meets with it on the fells from time to time. It formerly nested on Dove Crag (just outside the parish), where, I am sorry to say, its last nest was harried.

The Merlin is not recorded for the parish. I have seen a pair, in March 1887, on the small Grouse moor over Hawkshead Hall, where a friend later met with it.

Common Kestrel. ***Cerchneis tinnunculus*** (L.). Permanent resident. After the Buzzard our commonest Hawk. Its old nest-station on Gate Crag, after being regularly harried, has been vacated.

Common Cormorant. ***Phalacrocorax carbo*** (L.). Occasional visitant. Seen by myself 11th October 1901, and by Mr. Granville Sharp in the previous year.

Canada Goose. ***Branta canadensis*** (L.). Resident. According to common report this species was introduced on Grasmere Lake some years ago. A pair now breed regularly every year on an island in Rydal Lake. With the goslings they spend the autumn and early winter between the two lakes; and after disappearing for a time from both waters, the solitary pair return to Rydal punctually at the beginning of April, when the *honking* of the male bird becomes frequent.

Grey Lag Goose. ***Anser anser*** (L.). Geese are heard flying north regularly in February and March. Mr. H. E. Rawson considers them to be the Grey Lag.

Mallard. ***Anas boschas*** (L.). Permanent resident. Nests on the islands and, I believe, in the steep wood. The keeper thinks that the drakes have a lighter body than the usual Mallard.

Wigeon. ***Mareca penelope*** (L.). Occasional winter visitant. I have picked it up dead on the marsh at the lake head, and the keeper has come across it once.

Common Teal. ***Nettion crecca*** (L.). An occasional visitant only now, I believe. At least, I have seen a pair but once. Mr. Wykeham-Martin found a nest, however, on the lake.

Pochard. ***Nyroca ferina*** (L.). Winter visitant. Generally considered scarce, but has been frequent on the lake these last

two winters. In the cold weather of February 1901 their number, few at first, increased to 27. In January and February 1902 there were often more than 30 birds; probably the band of 33 or 34 first noticed on Loughrigg Tarn on 27th Nov. 1901. Like the following species the adult drakes are generally in a large majority.

Tufted Scaup-Duck. ***Fuligula fuligula*** (L.). Winter visitant. This pretty little Duck is, next to the Golden Eye, our most frequent winter visitor; and never more frequent than in the early days of March, shortly before it leaves. Then two or three are sure to be found feeding at the head of the lake, in the neighbourhood of the Coots, who give to them maybe a protective, home-like feeling. Larger, shyer bands, too, are seen; and these sail in a closer knot than any other Duck I know. All the winter-coming water-fowl are erratic in their movements; constant on the lake one winter, scarce another; here one day, gone the next. In fact, with many meres and tarns at hand, they roam; and their stay depends largely on the season's food supply. The apt local name for this species is Whitesides.

Golden-eyed Duck. ***Clangula clangula*** (L.). Winter visitant. Present every winter in varying numbers. It appears neither quite as early nor stays so late as Mr. Chapman reports it on the Northumbrian loughs. On the other hand, the parties seem larger here, and I have known thirteen in company. Adult drakes, too, are frequent, either with the party or singly, and are sometimes seen three together. It is November, and sometimes late in the month, before they appear; and on the latest date I have, 21st April, the two birds, duck and drake, were decidedly paired.

Goosander. ***Merganser merganser*** (L.). Occasional visitant. On 10th November 1900 I saw a female or young bird of this species diving in the lake.

Common Heron. ***Ardea cinerea*** L. Permanent resident. Constantly on the lake, and last autumn (1899) a couple seemed to roost in the trees of shore or island. But it has no nest station in the parish. The well-known heronry on the island was deserted, according to Mr. Jones Balme's report to Dr. Gough, three or four years before 1876, when the birds took to a Larch plantation on the side of Loughrigg. When this was given up I do not know. The birds nested in two fine Scotch Firs high on Silverhow, I was told, in the summers of 1897 and 1898; but this station likewise has been vacated.

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Common Bittern. ***Botaurus stellaris*** (L.). The Bittern I have no record of in the parish. One was shot at the head of Windermere a few years back. Another was shot at High Cross Tarn, above Hawkshead Hall, by Mr. James Cowper, who has the specimen stuffed.

Lapwing. ***Vanellus vanellus*** (L.). Summer visitant. Nests still in one or two of the marshy hollows of Loughrigg. Arrives on the Esthwaite Marsh in a large flock in February, but does not disperse to the higher breeding stations on the low fells till about middle of March. I have a note of its arrival on the marsh on 10th January 1890; and was told of a flock on Grasmere Marsh on 14th January 1900; but these too-early incursions are followed by withdrawals.

Common Curlew. ***Numenius arquatus*** (L.). Occasional visitor only, as it no longer breeds on Loughrigg. Its quavering cry is heard in early spring, as it moves to its nesting quarters, on the rough heights (Black Fell, Hawkshead Moor, etc.) round the head of Esthwaite Lake. In the late summer of 1898, when I had word that it was unusually numerous on its breeding ground, it pushed the incursions it makes into the Esthwaite hay meadows (when these were shorn of grass) so far as this parish. Nine or ten birds were about in the last days of July. Farmers regard these incursions as a sign of bad weather, as they are more marked in a rainy season, when the fields are soft.

Common Sandpiper. ***Tringoides hypoleucos*** (L.). Summer visitant. Several pairs nest upon the lake each summer. Last season (1899) they were so numerous that I met with six in one quarter mile of shore. Several of the nests were placed at some distance from it. One was in a patch of *Arum maculatum*. 15th April; 6th August.

Jack Snipe. ***Limnocryptes gallinula*** (L.). Winter visitant. On the marsh at the head of the lake. Latest date on Esthwaite Marsh, where it also is regularly, 4th April 1894. To the latter place comes the Common Snipe to breed. I cannot find it on the Rydal Marsh, though Mr. Wykeham-Martin says it nested there in his time. Probably the noisy traffic of the adjacent highroad has banished it.

Woodcock. ***Scolopax rusticola*** L. Permanent resident. Breeds regularly in the deep enclosed woods; cocks may be seen 'flighting' in the season from at least three different quarters of the parish. Mr. Wykeham-Martin has seen seven birds on the

wing together. I am told that it nests, too, in the woods above Grasmere. The gardener at Silverhow, who sees it often, found two young birds drowned in the garden well in a dry season when the beck was empty.

Common Tern. ***Sterna fluviatilis*** Naum. Occasional visitant. I picked up a dead bird on the west shore by Steps End on 22nd May 1897; a straggler probably from bands migrating to their nesting-ground on the Cumberland coast.

Black-headed Gull. ***Larus ridibundus*** L. Winter visitant and, indeed, at all seasons but the nesting. After the nesting is over it swarms up the valleys from the coast, and stays as long as food-supply holds out. It is here for the short season of the Bracken-clock Beetle, vast numbers of which it must eat. On 9th July 1899, I found a young bird by the lake shore so immature and weakly that it rose with difficulty, and was too feeble to move far. It must have been left behind from a moving flock.

Lesser Black-backed Gull. ***Larus fuscus*** L. Passing visitant in spring. A beautiful sight it is to see a pair of these Gulls drop and float side by side on the lake, while a third sweeps round with loud, queer cries. Odd birds are often present, too, after the nest-season, along with flocks of the former species, and spend their time floating on the lake snatching at the great flies. Formerly they bred on islands of Windermere and Ullswater.

Herring Gull. ***Larus argentatus*** Gmel. Occasional visitant. Seen sometimes in spring, like the above species.

Common Gull. ***Larus canus*** L. Winter visitant in small flocks. These are much larger in wild weather and in flood-times, when with the Black-headed Gull it haunts the flat land under Loughrigg.

Great Crested Grebe. ***Lophæthyia cristata*** (L.). Occasional visitant. Mr. Wykeham-Martin has seen it on the lake.

Red-necked Grebe. ***Lophæthyia grisegena*** (Bodd.). Occasional visitant. Seen by myself 6th March 1900. The identification of this species (of which I took careful notes) was very kindly confirmed by Mr. H. E. Rawson, who has skins of this species and of the Sclavonian Grebe shot on Windermere.

Little Grebe. ***Podiceps fluviatilis*** (Tunst.). Winter visitant. Frequents the river mouth and the shallower ends of the lake.

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Land Rail. ***Crex crex*** (L.). Summer visitant to the few hay meadows.

Moor Hen. ***Gallinula chloropus*** (L.). Permanent resident. Frequent by the lake at almost all times. I have seen its nest very cunningly constructed of Horse-tails, in a growing patch of which it was placed.

Common Coot. ***Fulica atra*** L. Permanent resident, except in the early months of autumn, when the birds vanish for a time. It is in the patches of Lesser Reed-mace (*Typha augustifolia*) that this bird chiefly nests. It may be seen in times of flood hurriedly building its nest higher.

Wood Pigeon. ***Columba palumbus*** L. Permanent resident. Large travelling parties appear, too, in the winter to feed upon Holly and Ivy berries, as well as upon acorns and Beech mast. As I have seen them upon the Juniper Fell above the Esthwaite Vale (where the farmer says they come sometimes 'in a cloud'), I suppose they also eat the 'Savin' berry.

Stock Dove. ***Columba œnas*** L. Summer visitant. A small flock of these birds generally appear with Ring Doves in the first months of the year and remain about the Knott Wood and the high trees under the Scar. That they occasionally nest in the rocks of the Scar is certain, as the keeper found a nest there in 1895 or 1896.

Red Grouse. ***Lagopus scoticus*** (Lath.). The keeper has never seen it in the parish, though it is said to be in the Heather of Wansfell. There is a small preserved Grouse moor above Hawkshead Hill. But in general the character of our mountains, on which the sheep graze in summer, does not favour the species.

Black Grouse. ***Lyrurus tetrix*** (L.). Occasional visitant. This species breeds on all the heights round the Esthwaite Valley, but has been only occasionally seen in Rydal by the keeper.

Common Partridge. ***Perdix perdix*** (L.). Permanent resident. Scarce. The keeper sees a pair occasionally on the breast of the Scar, above Hart Head; another in the park, whence they move into Scandale.

Common Pheasant. ***Phasianus colchicus*** L. Permanent resident. Extensive breeding is done at the park. The keeper tells me he has to protect the young chicks from Sparrow Hawks and from Jackdaws, which come upon them in a swarm. The Buzzards give no trouble.

NOTE on YORKSHIRE BIRDS.

Peregrine near Driffield.—A fine Peregrine Falcon (*Falco peregrinus*) was shot near Driffield in May last.—T. SHEPPARD, Hull, 15th July 1902.

NOTES on LINCOLNSHIRE BIRDS.

Woodcock and Nightjar Nesting in Lincolnshire.—In Tumby Wood, near Horncastle, Sir Henry M. Hawley, Bart., of Tumby Lawn, has recently seen a Woodcock (*Scolopax rusticola*) sitting on four eggs. He has also seen a Nightjar (*Caprimulgus europæus*) on her nest. I have known both these to occur before on the Moor-ground, near Woodhall Spa; but the occurrences are both somewhat unusual.—J. CONWAY WALTER, Langton Rectory, 14th June 1902.

Nidification and Variation of Birds at Lea, near Gainsborough, in 1902.—I should be glad to know whether it is usual for the Reed Bunting (*Emberiza schœniclus*) to build in the middle of an open meadow like the Skylark? During the first week of June 1902, two nests were found near Lea so built, in the middle of a large meadow in quite short grass, both nests singularly open and unconcealed. The sitting bird was flushed in both cases, thus rendering a mistake in the species impossible.

During the same week nests of the following birds were found in Lea parish:—Blackbird and Thrush (*Merula merula* and *Turdus musicus*) numerous; Hedge-sparrow (*Tharrhaleus modularis*); Greenfinch (*Ligurinus chloris*) much less numerous than in 1901 and former years; Chaffinch (*Fringilla cœlebs*); Brown Linnet (*Cannabina cannabina*) less numerous than in 1901; Bullfinch (*Pyrrhula europæa*); Reed Bunting (*Emberiza schœniclus*); Yellow Bunting (*Emberiza citrinella*); Pied Wagtail (*Motacilla lugubris*); Yellow Wagtail (*Motacilla campestris*), several pairs, all apparently nesting in one large meadow, and entirely confined to that area; Whitethroat (*Sylvia sylvia*) numerous; Lesser Whitethroat (*Sylvia curruca*), one example with young; Blackcap (*Sylvia atricapilla*) very numerous; Garden Warbler (*Sylvia simplex*) less numerous than in former years; Willow Warbler (*Phylloscopus trochilus*); Sedge Warbler (*Acrocephalus phragmitis*); Wren (*Anorthura troglodytes*) much less numerous than in 1901, when Lea Hall garden was full of nests; Tree Pipit (*Anthus trivialis*); Meadow Pipit (*Anthus pratensis*); Great Tit (*Parus major*); Blue Tit (*Parus cæruleus*); Long-tailed Tit (*Ægithalus vagans*); Gold-crested Wren (*Regulus regulus*); Moorhen (*Gallinula chloropus*); Woodpigeon (*Columba palumbus*); Stock-dove (*Columba œnas*); Turtledove (*Turtur turtur*); Partridge (*Perdix perdix*); and Pheasant (*Phasianus colchicus*).

No nest of the Nightingale (*Daulias luscinia*) was found, as this year there was only one pair, in place of the four or five which are generally to be heard in Lea parish.

Has any member of the Lincolnshire Naturalists' Union ever noticed an unusual occurrence of curious oological varieties in the season following a cold spring? This year the amount of curious varieties found at Lea has been very remarkable; and it occurred to me that possibly the cold late spring might have something to do with it. Among the varieties found were two clutches of the pale-blue Chaffinches' eggs, without spots; a clutch of Blackcap's eggs, white with very few pale yellow spots (when blown this egg was snow-white, and formed a most extraordinary contrast to the two ordinary Blackcap types); a snow-white Pheasant's egg; a very curious clutch of Reed Bunting's, very small light olive-greenish eggs, with few uncertain markings (the lightest egg of the clutch, which was marked chiefly at the larger end, was hardly distinguishable from a Whitethroat's); and a clutch of Spotted Flycatcher's eggs (*Muscicapa grisola*), five in number, very large, pale blue, unspotted, and all irregular in shape. I am waiting to see whether the last-mentioned eggs will hatch, as I think it probable, from their abnormal shape, that they are unfertile.—MARGARET L. ANDERSON, Lea Hall, Gainsborough, 1st July 1902.

NOTE on GEOLOGY.

Boulders at Cawthorne, Barnsley.—I have read with great interest the two papers on Yorkshire boulders in the July 'Naturalist.' Some years ago I had the good fortune to find, almost in situ, an erratic of considerable size (38 × 22 × 16 in.), which had just been dug up in the draining of a field about 1¼ miles S.S.W. from where I write, and some 4½ miles west of where Mr. W. Hemingway's boulders were found which are mentioned on page 220. I have since found another erratic from the Lake District of the same kind (28 × 22 × 14 in.) in a position to which it has evidently been brought from some short distance, about ¾ mile N.N.W. from where the other was. One feels encouraged to hope that further evidences of ice-agency may be found in this neighbourhood. Prof. Kendall has seen the former of these two and describes it as a cleaved volcanic ash of the Borrowdale series.—CHARLES T. PRATT, Cawthorne Vicarage, Barnsley, 9th July 1902.

NOTE on PLANTS, SHELLS, and BEETLES.

Notes at Auburn, Holderness Coast: Plants, Shells, Beetles.—Three miles south of Bridlington Quay a house, or rather half a house, stands on a hummock by the sandy shore—a relic of the village of Auburn. The landward side of the house appears habitable; on the seaward side a room, cut through the middle, gapes to the sun and the wind. A little stream here finds its way to the sea, and many sea-side plants thrive—*Convolvulus soldanella* opens its large rose-painted vases; the Sea Rocket exhales its delicate fragrance, and huge blue-green tufts of *Elymus* wave gracefully in the breeze.

Snails abound in the sand, especially *Helix cantiana,* which I had not before noticed in such a situation.

At the roots of grass many beetles lurk, specially the big black *Broscus cephalotes* and the sand-loving *Calathus mollis.* It is in fact a place to delight a naturalist—lonely, wild, and full of birds, insects, shells, and flowers—'a waste and solitary place,' such as Shelley speaks of with true poetic feeling.—W. C. HEY, West Ayton, Yorkshire, 9th July 1902.

NOTES on YORKSHIRE PALÆONTOLOGY.

Large Mammoth's Tooth at Aldborough.—On a joint excursion of the Hull Geological Society and Hull Scientific and Field Naturalists' Club to Aldborough, on the 5th July, a very fine tooth of a Mammoth (*Elephas primigenius*) was obtained. The specimen is in an excellent state of preservation, and apparently belonged to a fairly young animal. In proportion the grinding surface of the tooth is only small, being five inches across, whereas the greatest length of the tooth is twelve inches. Its weight is only a trifle short of fourteen pounds. It has been placed in the Hull Museum.—T. SHEPPARD, Municipal Museum, Hull, 7th July 1902.

Pleistocene Fishes in South-East Yorkshire.—In the Geological Magazine for February 1901, Mr. E. T. Newton, F.R.S., gives a list of all the records of remains of British Pleistocene fishes known up to that time. This includes a Perch (*Perca fluviatilis* L.) from the post-Glacial lacustrine deposits at Hornsea and Withernsea, and the Cod-fish (*Gadus morhua* L.) from the pre-Glacial buried cliff at Sewerby. The former records are taken from Clement Reid's 'Geology of Holderness' (Geol. Surv. Memoir, 1885), and the latter from G. W. Lamplugh's 'Drifts of Flamborough Headland' (Quart. Journ. Geol. Soc., Vol. 47, 1891).

To these records I am able to add remains of the Pike (*Esox lucius* L.), from the post-Glacial peat beds at Atwick, Hornsea, and Out Newton. The latter station is between Withernsea and Spurn.—T. SHEPPARD, Municipal Museum, Hull, 5th July 1902.

NOTES on COLEOPTERA.

***Habrocerus capillaricornis* near Carlisle.**—On 2nd March last, while working flood refuse for Coleoptera on the Eden at Wetheral, I took eight specimens of this beetle. They were all taken from one heap of refuse. According to Fowler's 'British Coleoptera' this species has not been recorded from further north than Scarborough.—JAS. MURRAY, 11, Close Street, Carlisle, 9th June 1902.

***Agabus congener*, etc., in Upper Teesdale.**—During an early visit to Upper Teesdale, on the 25th April, I took a specimen of *Agabus congener* Payk. in a mossy pool on the slope of Mickle Fell. An old and somewhat doubtful Askham Bog record appears to be all that is known of this northern or subalpine species as a Yorkshire insect.

In the same pool were numbers of *Hydroporus gyllenhali* Schiödt., a common moorland water-beetle in the northern portion of the county.—M. LAWSON THOMPSON, 35, Leven Street, Saltburn-by-the Sea, 22nd May 1902.

***Chlænius vestitus* at Bridlington Quay.**—Canon Fowler says of *C. vestitus* Payk. 'not recorded from the north of England,' but in hunting up records for the Yorkshire List I found that Archdeacon Hey had recorded in his diary taking it at Clifton, near York, in 1842, and that Mr. E. A. Waterhouse had met with it at Studley. The Wentbridge record is perhaps doubtful. However, no one seems to have taken it either on the Yorkshire coast or in the south-eastern district of the county, so that I felt much pleasure in capturing eight specimens of this conspicuous and beautiful beetle on the cliffs midway between Bridlington Quay and Sewerby. I found the insects running upon wet slopes of gravel and boulder clay. The species has a wide distribution, for the last time I saw it was near Cordova, in Spain, where, on turning over a big stone, I found it in company with a yet finer (but non-British) species, *Chlænius velutinus* Duftschm., and four young snakes! Insect-hunting in England is, perhaps fortunately, not often accompanied with such lively incidents.—W. C. HEY, West Ayton, Yorkshire, 9th July 1902.

NORTHERN NOTES and NEWS.

Hull Museum Publications, No. 7, contains a paper on 'East Riding Geology,' by the Curator, recently read to the Hull Geological Society, as well as a paper on 'Old Hull Pottery.' These publications are descriptive of various objects in the Museum, and are sold at one penny each.

Captain Colbeck, of Hull, who has had much experience in the Antarctic Seas, and was on the staff of the 'Southern Cross' expedition, sailed early in July in charge of the 'Morning,' which will act as tender for the 'Discovery,' now in the Antarctic. Several of the crew are also Hull men.

'The Alga-Flora of Yorkshire,' by W. West and G. S. West, which has been issued to the members of the Yorkshire Naturalists' Union in sections, as Transactions, is now complete, and can be obtained, suitably bound, from the Honorary Secretaries of the Union at Leeds. The price is six shillings.

The Report of the British Association, Glasgow meeting, has been published, and contains several items of interest to Yorkshire naturalists, though they principally occur in Section C. In addition to abstracts of papers on Yorkshire Geology, the volume contains reports of the Committees on Erratic Blocks, Geological Photographs, and Life Zones in the British Carboniferous Rocks; in all of which Yorkshire geology and geologists play an important part.

NOTE on YORKSHIRE FLOWERING PLANTS.

***Gagea lutea* near Silsden.**—I wish to place on record the occurrence of *Gagea lutea* Ker., in Lower Airedale. On 13th April of the present year a gentleman informed a Skipton friend of mine of a plant he had found in a plantation at Swartha, Silsden. From his description my friend judged that it must be none other than *Gagea lutea*, so he advised him to send on a few specimens for identification. On 16th May I myself had the pleasure of seeing these, and can therefore vouch for the specimens being, although only mutilated ones, certainly *Gagea lutea* Ker.; so that the record is one of very great interest for the lower part of Airedale, seeing that Mr. F. A. Lees in his 'Flora of West Yorkshire' does not give a single note of the plant for that part of the Aire valley; and considering that the plant has during the last ten years been recorded in no less than three localities for Wharfedale, it is very singular that it should not have been recorded for Airedale before now.—LISTER ROTHERAY, Market Square, Long Preston, R.S.O., 9th June 1902.

NOTE on YORKSHIRE MOSSES.

Additional Records of Harpidioid Hypna in Yorkshire.—The following are additions to my list of Harpidioid Hypna of Yorkshire and Durham published in 'The Naturalist,' March 1902:—

1. *Hypnum aduncum* Hedw., Group *typicum* Ren., forma *falcata* Ren., Naburn (61); Group *pseudofluitans* Sanio, var. *paternum* Sanio, forma *gracilis* Ren. MS., Naburn (61) and submerged in pool, Askham Bog (64).

2. *Hypnum fluitans* L., Group *amphibium* Ren., forma *Holleri* (Sanio) Ren., Skipwith Common (61); forma *condensata* Sanio, Skipwith Common (61); forma *terrestris* Sanio, Skipwith Common (61); var. *gracile* Boul., forma *laxifolia* Ren., Skipwith Common (61).

Group *falcatum* Ren., var. *alpinum* Sanio, Skipwith Common (61).

Group *exannulatum* Ren., var. *pinnatum* Boul., Strensall Common (62); forma *gracilescens* Ren., Strensall Common (62); forma *polyclada* Ren. MS., Skipwith Common (61), fine and typical.

Sub-group *Rotæ* Ren., var. *falcifolium* Ren., Strensall (62), a small form, truly typical; forma *inundata* Ren., in pool on top of Widdy Bank, Teesdale (66). Mr. Wheldon has kindly confirmed the above.—WM. INGHAM, York, 30th June 1902.

NORTHERN NOTES and NEWS.

Dr. A. W. Rowe, F.G.S., who has done so much work on the Zones of the White Chalk of the South of England, has recently visited Yorkshire, together with Mr. C. Davies Sherborn, F.G.S. These gentlemen spent some weeks on the magnificent cliff sections around Flamborough Headland, and the result of their work is awaited with interest.

Probably one of the most important contributions to the Glacial literature of our northern counties that has been made for some time is a paper by Professor P. F. Kendall, F.G.S., the President of the Yorkshire Naturalists' Union, recently read to the Geological Society of London. This was on 'A System of Glacial-Lakes in the Cleveland Hills.' The paper will probably appear in extenso in the next issue of the Society's journal.

Mr. Edward Lamplough, of Hull, has issued a book of 'Hull Sonnets' for private circulation, several of them dedicated to naturalist friends:—

'For often underneath the blue
We've trod the grass and plucked the scented bloom,
And vowed it was a joy to simply live
And revel 'mid the greenwood and the dew,
Wrapped in the gay breeze and its rich perfume.'

LINCOLNSHIRE NON-MARINE MOLLUSCA.

H. WALLIS KEW, F.Z.S.,

London; formerly of Louth, Lincolnshire.

FIFTEEN years have now elapsed since the publication of Mr. Roebuck's admirable 'Materials towards a List of the Land and Freshwater Mollusca of Lincolnshire,' which appeared in 'The Naturalist' for August 1887. Since that time, owing in great measure to Mr. Roebuck's continued interest in the subject and to the enthusiasm which he has transmitted to others, important additions have been made; and within the knowledge of the present writer there are conchologists in Lincolnshire who do not possess a long series of volumes of 'The Naturalist' and are thus in ignorance of the exact constituents of the non-marine molluscan fauna of the county. In view of this fact it seems useful to mark a list of British species to show at a glance those which have, and those which have not, been found within our area. This is now done, and it is hoped that its publication will stimulate Lincolnshire conchologists to a more careful search for such of the unrecorded species as may reasonably be expected to occur, e.g., *Acicula lineata, Hygromia fusca, Azeca tridens, Vertigo antivertigo,* etc. As a further encouragement it may not be improper to say that Mr. Roebuck hopes to give, at a future date, a new and full account of the subject, with all necessary details of localities, and proper acknowledgments of the work done by each collector.

In addition to the unequivocal land and freshwater mollusca, the present list is made to include *Assiminea, Paludestrina,* and all the British Pulmonata, although some of these are in a certain sense marine, living in more or less brackish water, or leading a semi-terrestrial existence under the influence of the sea. A few species which do not belong to our fauna, but which have established themselves in our midst, are also included; but, on the other hand, certain forms—somewhat recently described or brought forward as British—about the status of which difference of opinion is understood to exist, are omitted. In this way we arrive at a total of 149 species; and of this number 110 have already been found in Lincolnshire. The vast majority of the specimens have been collected by Mr. Roebuck himself, or submitted by their finders to the referees of the Conchological Society as formerly constituted at Leeds; and in all cases where the contrary is not indicated

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Mr. J. W. Taylor has been made responsible for the determination of the shell-bearing species and Mr. Roebuck for the slugs. One must not omit to mention in this place the good work done by Mr. C. S. Carter, of Louth, whose name is associated with six recent additions to the county-fauna, viz.:—*Vertigo angustior* and *Vitrea lucida*, collected by himself at Somercotes and Welton Wood; *Pupa secale* and *Pyramidula rupestris*, collected by Mr. R. Worsdale and Mr. H. Preston near Grantham; *Pisidium henslowanum*, collected by the Rev. E. A. Woodruffe Peacock and by the writer in the Ancholme district; and *Paludestrina jenkinsi*, collected by Mr. Carter at Tetney and by the writer at Cleethorpes.

As regards arrangement and nomenclature, the outline classification here employed resembles that of Pelseneer's 'Introduction à l'Etude des Mollusques' (1894); the genera of Helicidæ are those approved by Pilsbry in his 'Guide to the Study of Helices' (1894); and the general arrangement of the Pulmonata Stylommatophora is that of the same author's 'Catalogue of the Land Shells of America North of Mexico' (1897-8). For the rest the list is largely based on the Conchological Society's catalogue of 1892; but valued hints have been taken from the list appended by Kennard and Woodward to their 'Post-Pliocene Non-Marine Mollusca of the South of England' (1901). In all cases where a species figures as a member of our fauna in Jeffreys' 'British Conchology' (1862-9) the name used by that author is added in square brackets. The world has moved apace since the publication of this delightful work; and in common with a large number of colleagues, the present writer looks forward with confidence, and some impatience, to the time when the completion of Mr. Taylor's 'Monograph of the Land and Freshwater Mollusca of the British Isles' will furnish our conchologists with a modern text-book and a uniform system of nomenclature.

A. GASTROPODA.

I.—PROSOBRANCHIA.

a. ASPIDOBRANCHIA.

NERITIDÆ.

× 1. ***Neritina fluviatilis*** (Linn.). [Neritina fluviatilis.]

b. PECTINIBRANCHIA.

PALUDESTRINIDÆ.

2. ***Paludestrina confusa*** (Frau.). [Hydrobia similis.]

S. × 3. ***Paludestrina jenkinsi*** (Smith).

4. *Paludestrina taylori* Smith.

S. × 5. ***Paludestrina ventrosa*** (Mont.).
[Hydrobia ventrosa.]

S. × 6. ***Paludestrina stagnalis*** (Bast.). [Hydrobia ulvæ.]

× 7. ***Bithynia tentaculata*** (Linn.). [Bythinia tentaculata.]

× 8. ***Bithynia leachii*** (Shepp.). [Bythinia Leachii.]

VIVIPARIDÆ.

× 9. ***Vivipara vivipara*** (Linn.). [Paludina vivipara.]

× 10. ***Vivipara contecta*** (Millet). [Paludina contecta.]

VALVATIDÆ.

× 11. ***Valvata piscinalis*** (Müll.). [Valvata piscinalis.]

× 12. ***Valvata cristata*** Müll. [Valvata cristata.]

ASSIMINEIDÆ.

13. ***Assiminea grayana*** Leach. [Assiminea Grayana.]

CYCLOSTOMATIDÆ.

× 14. ***Cyclostoma elegans*** (Müll.) [Cyclostoma elegans.]

ACICULIDÆ.

15. ***Acicula lineata*** (Drap.). [Acme lineata.]

II.—PULMONATA.

a. BASOMMATOPHORA.

AURICULIDÆ.

× 16. ***Carychium minimum*** Müll. [Carychium minimum.]

17. ***Alexia denticulata*** (Mont.).
[Melampus myosotis var. ringens.]

S. × 17a. ***Alexia denticulata*** v. ***myosotis*** (Drap.).
[Melampus myosotis.]

18. ***Leuconia bidentata*** (Mont.).
[Melampus bidentatus.]

OTINIDÆ.

19. ***Otina otis*** (Turt.). [Otina otis.]

LIMNÆIDÆ.

× 20. ***Ancylus fluviatilis*** Müll. [Ancylus fluviatilis.]

× 21. ***Velletia lacustris*** (Linn.). [Ancylus lacustris.]

× 22. ***Limnæa stagnalis*** (Linn.). [Limnæa stagnalis.]

× 23. ***Limnæa palustris*** (Müll.). [Limnæa palustris.]
× 24. ***Limnæa truncatula*** (Müll.). [Limnæa truncatula.]
× 25. ***Limnæa glabra*** (Müll.). [Limnæa glabra.]
× 26. ***Limnæa auricularia*** (Linn.). [Limnæa auricularia.]
× 27. ***Limnæa pereger*** (Müll.). [Limnæa peregra.]
28. ***Limnæa involuta*** Harv. [Limnæa involuta.]
× 29. ***Amphipeplea glutinosa*** (Müll.). [Limnæa glutinosa.]
× 30. ***Planorbis lineatus*** (Walker). [Planorbis lineatus.]
× 31. ***Planorbis fontanus*** (Lightf.). [Planorbis nitidus.]
× 32. ***Planorbis nautileus*** (Linn.). [Planorbis Nautileus.]
33. *Planorbis dilatatus* Gould.
× 34. ***Planorbis albus*** Müll. [Planorbis albus.]
35. ***Planorbis glaber*** Jeff. [Planorbis glaber.]
× 36. ***Planorbis spirorbis*** Müll. [Planorbis spirorbis.]
× 37. ***Planorbis vortex*** (Linn.). [Planorbis vortex.]
× 38. ***Planorbis carinatus*** Müll. [Planorbis carinatus.]
× 39. ***Planorbis marginatus*** Drap. [Planorbis complanatus.]
× 40. ***Planorbis corneus*** (Linn.). [Planorbis corneus.]
× 41. ***Planorbis contortus*** (Linn.). [Planorbis contortus.]

PHYSIDÆ.

× 42. ***Aplexa hypnorum*** (Linn.). [Physa hypnorum.]
× 43. ***Physa fontinalis*** (Linn.). [Physa fontinalis.]
44. *Physa acuta* Drap.
45. *Physa heterostropha* Say.

b. STYLOMMATOPHORA.

HELICIDÆ.

× 46. ***Helix aspersa*** Müll. [Helix aspersa.]
47. ***Helix pomatia*** Linn. [Helix pomatia.]
× 48. ***Helix nemoralis*** Linn. [Helix nemoralis.]
× 49. ***Helix hortensis*** Müll. [Helix nemoralis var. hortensis.]
50. ***Helix pisana*** Müll. [Helix Pisana.]
× 51. ***Helicigona arbustorum*** (Linn.). [Helix arbustorum.]
× 52. ***Helicigona lapicida*** (Linn.). [Helix lapicida.]
53. ***Helicodonta obvoluta*** (Müll.). [Helix obvoluta.]

× 54. ***Hygromia rufescens*** (Penn.). [Helix rufescens.]
55. ***Hygromia revelata*** (Mich.). [Helix revelata.]
× 56. ***Hygromia hispida*** (Linn.). [Helix concinna.]
× 56a. ***Hygromia hispida*** v. ***hispidosa*** (Mous.). [Helix hispida.]
× 57. ***Hygromia granulata*** (Ald.). [Helix sericea.]
58. ***Hygromia fusca*** (Mont.). [Helix fusca.]
59. ***Helicella cartusiana*** (Müll.). [Helix Cartusiana.]
× 60. ***Helicella cantiana*** (Mont.). [Helix Cantiana.]
61. ***Helicella barbara*** (Linn.). [Bulimus acutus.]
62. *Helicella elegans* (Gmel.).
× 63. ***Helicella caperata*** (Mont.). [Helix caperata.]
× 64. ***Helicella itala*** (Linn.). [Helix ericetorum.]
× 65. ***Helicella virgata*** (DaC.). [Helix virgata.]
× 66. ***Acanthinula aculeata*** (Müll.). [Helix aculeata.]
67. ***Acanthinula lamellata*** (Jeff.). [Helix lamellata.]

. . .

× 68. ***Vallonia pulchella*** (Müll.). [Helix pulchella.]
× 69. ***Vallonia costata*** (Müll.). [Helix pulchella var. costata.]

BULIMINIDÆ.

70. ***Buliminus montanus*** (Drap.). [Bulimus montanus.]
× 71. ***Buliminus obscurus*** (Müll.). [Bulimus obscurus.]

PUPIDÆ.

× 72. ***Pupa secale*** Drap. [Pupa secale.]
73. ***Pupa anglica*** (Fér.). [Pupa ringens.]
× 74. ***Pupa cylindracea*** (DaC.). [Pupa umbilicata.]
× 75. ***Pupa muscorum*** (Linn.). [Pupa marginata.]
76. ***Vertigo antivertigo*** (Drap.). [Vertigo antivertigo.]
77. ***Vertigo moulinsiana*** (Dup.). [Vertigo Moulinsiana.]
× 78. ***Vertigo pygmæa*** (Drap.). [Vertigo pygmæa.]
79. ***Vertigo alpestris*** Ald. [Vertigo alpestris.]
80. ***Vertigo substriata*** (Jeff.). [Vertigo substriata.]
81. ***Vertigo pusilla*** Müll. [Vertigo pusilla.]
× 82. ***Vertigo angustior*** Jeff. [Vertigo angustior.]
A. × 83. ***Vertigo minutissima*** (Hartm.). [Vertigo minutissima.]

× 84. ***Balea perversa*** (Linn.). [Balia perversa.]
× 85. ***Clausilia bidentata*** (Ström.). [Clausilia rugosa.]
86. ***Clausilia cravenensis*** Taylor.
[Clausilia rugosa var. dubia.]
× 87. ***Clausilia rolphii*** Gray. [Clausilia Rolphii.]
88. ***Clausilia biplicata*** (Mont.). [Clausilia biplicata.]
× 89. ***Clausilia laminata*** (Mont.). [Clausilia laminata.]

ACHATINIDÆ.

90. *Opeas goodalli* (Mill.).
× 91. ***Cæcilioides acicula*** (Müll.). [Achatina acicula.]
× 92. ***Cochlicopa lubrica*** (Müll.). [Cochlicopa lubrica.]
93. ***Azeca tridens*** (Pult.). [Cochlicopa tridens.]

TESTACELLIDÆ.

× 94. ***Testacella haliotidea*** Drap. [Testacella Haliotidea.]
W. × 95. ***Testacella scutulum*** Sby.
[Testacella Haliotidea var. scutulum.]
96. ***Testacella maugei*** Fér. [Testacella Maugei.]

ZONITIDÆ.

× 97. ***Vitrina pellucida*** (Müll.). [Vitrina pellucida.]
× 98. ***Vitrea lucida*** (Drap.).
× 99. ***Vitrea cellaria*** (Müll.). [Zonites cellarius.]
× 100. ***Vitrea glabra*** (Brit. Auct.).
× 101. ***Vitrea alliaria*** (Mill.). [Zonites alliarius.]
× 102. ***Vitrea nitidula*** (Drap.). [Zonites nitidulus.]
× 103. ***Vitrea radiatula*** (Ald.). [Zonites radiatulus.]
× 104. ***Vitrea pura*** (Ald.) [Zonites purus.]
× 105. ***Vitrea crystallina*** (Müll.). [Zonites crystallinus.]
× 106. ***Euconulus fulvus*** (Müll.). [Zonites fulvus.]
× 107. ***Zonitoides nitidus*** (Müll.). [Zonites nitidus.]
F. × 108. ***Zonitoides excavatus*** (Bean). [Zonites excavatus.]

LIMACIDÆ.

× 109. ***Limax maximus*** Linn. [Limax maximus.]
P. × 110. ***Limax cinereo-niger*** Wolf.
× 111. ***Limax flavus*** Linn. [Limax flavus.]
× 112. ***Limax arborum*** B.-Ch. [Limax arborum.]
× 113. ***Agriolimax agrestis*** (Linn.). [Limax agrestis.]

× 114. ***Agriolimax lævis*** (Müll.). [Limax lævis.]
× 115. ***Amalia gagates*** (Drap.). [Limax gagates.]
× 116. ***Amalia sowerbyi*** (Fér.). [Limax marginatus.]

ARIONIDÆ.

× 117. ***Arion ater*** (Linn.). [Arion ater.]
× 118. ***Arion subfuscus*** (Drap.).
× 119. ***Arion intermedius*** (Norm.). [Arion flavus.]
× 120. ***Arion hortensis*** Fér. [Arion hortensis.]
× 121. ***Arion circumscriptus*** Johnst.
122. ***Geomalacus maculosus*** Allm. [Geomalacus maculosus.]

ENDODONTIDÆ.

× 123. ***Pyramidula rotundata*** (Müll.). [Helix rotundata.]
× 124. ***Pyramidula rupestris*** (Drap.). [Helix rupestris.]
× 125. ***Punctum pygmæum*** (Drap.). [Helix pygmæa.]
× 126. ***Sphyradium edentulum*** (Drap.). [Vertigo edentula.]

SUCCINEIDÆ.

× 127. ***Succinea putris*** (Linn.). [Succinea putris.]
× 128. ***Succinea elegans*** Risso. [Succinea elegans.]
129. ***Succinea oblonga*** Drap. [Succinea oblonga.]

ONCHIDIIDÆ.

130. ***Onchidiella celtica*** (Cuv.). [Oncidium Celticum.]

B. PELECYPODA.

I.—EULAMELLIBRANCHIA.

a. SUBMYTILACEA.

DREISSENSIIDÆ.

× 131. ***Dreissensia polymorpha*** (Pall.). [Dreissena polymorpha.]

UNIONIDÆ.

× 132. ***Unio tumidus*** Phil. [Unio tumidus.]
× 133. ***Unio pictorum*** (Linn.). [Unio pictorum.]
134. ***Unio margaritifer*** (Linn.). [Unio margaritifer.]
× 135. ***Anodonta cygnea*** (Linn.). [Anodonta cygnea.]
× 136. ***Anodonta anatina*** (Linn.). [Anodonta anatina.]

CYRENIDÆ.

× 137. ***Sphærium corneum*** (Linn.). [Sphærium corneum.]
× 138. ***Sphærium rivicola*** (Leach). [Sphærium rivicola.]
139. ***Sphærium pallidum*** Gray. [Sphærium ovale.]
× 140. ***Sphærium lacustre*** (Müll.). [Sphærium lacustre.]
× 141. ***Pisidium amnicum*** (Müll.). [Pisidium amnicum.]
× 142. ***Pisidium fontinale*** (Drap.). [Pisidium fontinale.]
× 143. ***Pisidium henslowanum*** (Shepp.). [Pisidium fontinale var. Henslowana.]
144. ***Pisidium pulchellum*** Jenyns. [Pisidium fontinale var. pulchella.]
145. ***Pisidium cinereum*** Ald. [Pisidium fontinale var. cinerea.]
× 146. ***Pisidium pusillum*** (Gmel.). [Pisidium pusillum.]
× 147. ***Pisidium obtusale*** (Lam.). [Pisidium pusillum var. obtusalis.]
× 148. ***Pisidium nitidum*** Jenyns. [Pisidium nitidum.]
× 149. ***Pisidium milium*** Held. [Pisidium roseum.]

S. Specimens obligingly examined by Mr. Edgar A. Smith, of the British Museum. A. Marked on the authority of Mr. L. E. Adams, 'The Collector's Manual of British Land and Freshwater Shells,' ed. 2, 1896, p. 102. F. On the authority of Mr. F. W. Fierke, 'The Naturalist,' 1893, p. 312. P. On the authority of the Rev. E. A. Woodruffe Peacock, 'The Naturalist,' 1901, p. 355. W. On the authority of Mr. W. M. Webb, 'Journal of Malacology,' VI. (1897), p. 26.

BIBLIOGRAPHY.

The writer ventures to append a short Bibliography indicating the two principal papers on Lincolnshire Non-Marine Mollusca (those of Mr. Ball and Mr. Roebuck), and the published records of the finding of additional species from time to time.

(1) Ball, Thomas. 'Land-Shells of Lincolnshire.' [A list of 67 land and freshwater mollusca (with a mention of unidentified *Pisidia*) taken in the northern part of the county, principally in the neighbourhood of Brigg; and including, among freshwater shells *Dreissena polymorpha* (=*Dreissensia polymorpha*), *Cyclas rivicola* (=*Sphærium rivicola*); among land shells *Helix cantiana* (=*Helicella cantiana*), *Achatina acicula* (=*Cæcilioides acicula*); together with the semi-terrestrial *Conovulus myosotis* (=*Alexia denticulata* v. *myosotis*),

the last doubtless from the Humber.] 'Young England,' III. (1864), pp. 76, 128. Reprinted in 'The Naturalist,' 1894, pp. 287-288.

(2) Roebuck, W. Denison. 'Materials towards a list of the Land and Freshwater Mollusca of Lincolnshire.' [A detailed enumeration of 88 species—11 slugs, 39 land and 38 freshwater shells—known to the author to inhabit the county, with full particulars of localities, a description of the districts which the author and his co-operators had investigated—more particularly the neighbourhood of Alford and Louth, from whence came *Clausilia rolphii*—and a brief account of the bibliography from Lister (1678) to Lightwood (1882). The list includes, besides *C. rolphii, Neritina fluviatilis, Limnæa glabra, Planorbis lineatus, Helix lapicida* (=*Helicigona lapicida*), *Helix sericea* (=*Hygromia granulata*), *Amalia gagates, Pisidium roseum* (=*Pisidium milium*), etc.; and read in conjunction with Ball (1)—allowing for changes of view as to the status of certain forms—it brings up the total to 94 species.] 'The Naturalist,' 1887, pp. 245-272.

(3) Quilter, H. E. 'Note on the Occurrence of Testacella scutulum Sow. in Leicestershire.' [Belvoir Castle gardens: Linc. S.?] 'Journal of Conchology,' V. (1888), p. 320.

(4) Kew, H. W. 'Shells of the Lincolnshire Coast.' [*Hydrobia ulvæ* (=*Paludestrina stagnalis*), Saltfleetby, etc.; *Hydrobia ventrosa* (=*Paludestrina ventrosa*), Somercotes.] 'The Naturalist,' 1889, pp. 357-365.

(5) Roebuck, W. Denison. [*Arion minimus* (=*A. intermedius*), Linc. N.] 'Journal of Conchology,' VI. (1890), p. 269.

(6) Gude, G. K. [*Pisidium obtusale*, Rigsby (J. B. Davy).] 'Journal of Conchology,' VII. (1892), p. 46.

(7) Burton, F. M. [*Assiminea grayana,* Cleethorpes, etc. The writer hesitates to mark this species in the present list, thinking it probable that the animal referred to is *Paludestrina stagnalis.*] 'The Naturalist,' 1893, p. 255.

(8) Fierke, F. W. [*Hyalinia excavata* (=*Zonitoides excavatus*), Woodhall Spa.] 'The Naturalist,' 1893, p. 312.

(9) Kew, H. W. '*Limnæa glutinosa* in Lincolnshire.' [=*Amphipeplea glutinosa,* Saltfleetby.] 'The Naturalist,' 1894, p. 68.

(10) Adams, L. E. 'The Collector's Manual of British Land and Freshwater Shells,' ed. 2, 1896, p. 102. [*Vertigo minutissima,* Cleethorpes.]

(11) Webb, W. M. 'The British Species of *Testacella.*' [*Testacella scutulum,* High Park Gardens, Stamford.] 'Journal of Malacology,' VI. (1897), p. 26.

(12) Burton, F. M. '*Testacella haliotidea* at Gainsborough.' 'The Naturalist,' 1898, p. 320.

(13) Taylor, J. W. '*Vertigo angustior* in Lincolnshire.' [Somercotes, C. S. Carter.] 'The Naturalist,' 1900, p. 291.

(14) Peacock, Rev. E. A. Woodruffe. '*Limax cinereo-niger* near Brigg.' 'The Naturalist,' 1901, p. 355.

(15) CARTER, C. S. '*Pyramidula rupestris* near Grantham.' 'The Naturalist,' 1902, p. 270.

(16) CARTER, C. S. '*Pupa secale* in South Lincolnshire.' 'The Naturalist,' 1902, p. 270.

(17) CARTER, C. S., and KEW, H. W. [Two notes on *Pisidium henslowanum* near Brigg.] 'The Naturalist,' 1902, p. 271.

(18) CARTER, C. S. '*Hyalinia lucida* near Alford, North Lincolnshire.' [= *Vitrea lucida*.] 'The Naturalist,' 1902, p. 270.

(19) KEW, H. W. '*Paludestrina jenkinsi* in Lincolnshire.' 'The Naturalist.' 1902, p. 270.

NOTES on LINCOLNSHIRE MOLLUSCA.

***Pyramidula rupestris* near Grantham.**—Among a collection of shells gathered at Great Ponton, near Grantham, Div. 15, and sent to me on 28th June by Mr. R. Worsdale, I found about twenty specimens of *Pyramidula rupestris*. Their identification has been verified by Mr. J. W. Taylor.—C. S. CARTER, 8, Bridge Street, Louth, 4th July 1902.

***Hyalinia lucida* near Alford, North Lincolnshire.**—On 14th July 1900, when the Louth Antiquarian and Naturalists' Society had an excursion to Welton Wood, Div. 11, a few miles from Alford, I searched for mollusca. Only a few specimens were found, and these I put away in a box. During a recent visit to Louth, Mr. H. Wallis Kew, F.Z.S., examined my collection, among them the Welton Wood specimens, one of which he suggested was possibly *Hyalinia lucida*, its form and texture corresponding with that species, but it was small in size. I have since submitted it to Mr. J. W. Taylor, who has identified it as *Hyalinia lucida*. It was found under a large piece of timber in a disused chalk-pit along with *H. helvetica*, *H. crystallina*, *Helix arbustorum* var. *alpestris*, *H. hispida*, *Clausilia bidentata*, and *C. laminata*.—C. S. CARTER, 8, Bridge Street, Louth, 4th July 1902.

***Paludestrina jenkinsi* in Lincolnshire.**—Specimens of this now notorious mollusc—*Paludestrina jenkinsi* (Smith)—were found by Mr. C. S. Carter and the writer on 17th April last in small ditches communicating with the North Fitties Drain on the landward side of the bank at Tetney, and just within the district of the estuary of the Humber. On the following day, moreover, a very numerous community of this species was found living in a dirty pool by the Grimsby Road at Cleethorpes, in company with small examples of *Limnæa pereger*. The Tetney shells were chiefly of the ecarinate form; but the vast majority of those from Cleethorpes were distinctly keeled and often beautifully tufted. Mr. Edgar A. Smith, of the British Museum, has kindly confirmed the identity of this animal, which is new to the county of Lincoln, but not to the Humber, being already known on the Yorkshire side, near Hull.—H. WALLIS KEW, London, 10th July 1902.

***Pupa secale* in South Lincolnshire.**—When visiting the Rev. E. A. Woodruffe Peacock, at Cadney, on 22nd and 23rd May, I had the pleasure of examining his collection of Lincolnshire land and freshwater shells. Among them I found a tube containing a single specimen of *Pupa secale*, with label saying 'Grantham, 1900, R. Worsdale.' Mr. Peacock informed me that he found it among a few *Buliminus obscurus* sent to him by Mr. R. Worsdale, of Grantham. As this species has not been recorded for the county, I wrote to Mr. Worsdale for its exact locality; he replied they were found on Hall Hills, Grantham. Since writing he has sent me a collection of local shells, and among them another specimen of *Pupa secale* from the same spot. Mr. Peacock informs me that this identification has been verified by Mr. J. W. Taylor.—C. S. CARTER, 8, Bridge Street, Louth, 30th June 1902.

NOTES on LINCOLNSHIRE MOLLUSCA.

***Pisidium henslowanum* and Band-Formula 12045 of *Helix nemoralis* near Brigg.**—Other specimens of interest which I also saw at Cadney were *Pisidium henslowanum* and the curiously and somewhat scarce banded form of *Helix nemoralis* (12045). The former was taken by Mr. Peacock at Cadney, 10th March 1900; the latter were found in 1900 living at Bottesford and dead at Ingoldmells in 1901.—C. S. CARTER, 8, Bridge Street, Louth, 30th June 1902.

***Pisidium henslowanum* in Lincolnshire.**—Although easily recognisable and far from scarce, this mollusc—*P. henslowanum* (Shepp.)—which I took from one of the drains by the Ancholme, near Appleby, in April last, does not appear to have been previously published as a Lincolnshire species. The Rev. E. A. Woodruffe Peacock, however, has a specimen taken at Cadney in 1900, and he has recently communicated to Mr. C. S. Carter, of Louth, a caddis-case from South Kelsey, on which are four of these shells. Mr. J. W. Taylor has obligingly confirmed the naming of my specimen.—H. WALLIS KEW, London, 10th July 1902.

Mollusca from Grantham District.—As comparatively little work among the mollusca of South Lincolnshire has been done, the following list of shells, collected in the immediate neighbourhood of Grantham, and sent to me on 7th June by Mr. R. Worsdale, may be of interest:—

Hyalinia cellaria var. *albina*. One specimen.
Hyalinia helvetica. *Hyalinia nitidula*.
Hyalinia crystallina.
Helix rotundata. *Helix pulchella*.
Helix lapicida. Four very good specimens, 'found in one spot on a wall at Great Ponton.' Mr. Worsdale remarks that he could not find a single specimen a yard from the spot.
Helix nemoralis vars. *libellula* (123)(45) and *rubella* : : 345, 00300.
Helix hortensis vars. *lutea* 00000, 12345 and *roseolabiata* 00000.
Helix arbustorum.
Helix cantiana. One immature specimen found at Somerby Hill.
Helix rufescens. *Helix hispida*.
Helix itala. 'Railway embankment near Grantham.'
Helix virgata vars. *albicans* and *subalbida*. Somerby Hill.
Buliminus obscurus.
Pupa secale. One specimen. *Pupa muscorum*.
Clausilia bidentata var. *everetti*.
Cochlicopa lubrica var. *lubricoides*. One specimen.
Ancylus fluviatilis.

The following were taken from the canal between Grantham and Harlaston:—

Succinea elegans.
Planorbis vortex. *Planorbis carinatus*.
Limnæa auricularia var. *albina*. One specimen.
Limnæa palustris.
Vivipara vivipara.
Bythinia tentaculata.
Valvata piscinalis.
Sphærium corneum.
Dreissensia polymorpha.

—C. S. CARTER, 8, Bridge Street, Louth, 30th June 1902.

NOTE on YORKSHIRE MOLLUSCA.

***Pupa ringens* at Flamborough Head.**—Near the Lighthouse are some slopes of boulder clay covered with moss through which water trickles. Here I found *Pupa ringens* in abundance last June. I notice this species prefers moss through which water passes, whereas *Vertigo antivertigo* affects moss by stagnant pools.—W. C. HEY, West Ayton, 9th July 1902.

NOTE on LAKELAND PLANTS.

Bog-Orchis in Lake-Lancashire and Westmorland.—In his Flora, appended to the new Lake Counties Guide (J. M. Dent & Co.), Mr. Petty mentions that the last record for the Bog-Orchis (*Malaxis paludosa*) in Lake Lancashire is one hundred years old. It may be well, therefore, to record my acquaintance with it there. It was found between the Esthwaite and the Grizedale valleys in August 1892, by Mr. Webb, a young botanist staying in the neighbourhood. A careful description led me to the spot, where it grew in a rill of rushes, fostered by water gathering from the Hawkshead fells, and but just beginning to trickle down towards Grizedale. I went and found it again in the two following years. An unrecorded habitat for the plant in Westmorland is on Loughrigg, where I have seen it for a number of years.—SOPHIA ARMITT, Rydal, 17th June 1902.

NOTE on LINCOLNSHIRE MAMMALS.

Otters at Great Sturton, Lincolnshire.—I send a note on two Otters (*Lutra lutra*) shot by Mr. G. Wattam, farmer, on or about 30th March 1901 in the parish of Great Sturton.—A. E. JARVIS, Brussels, 15th July 1902.

He says:—I went to scare Crows off a field of newly-sown barley, and just walked round a pond situated about a quarter of a mile from the river Bain, as I always do when near it, as it is a favourite place for game, Rabbits and Wild Duck, when in season. A lot of willows, thorns, and long grass grow up in and around the pond, and make good covert. On this day I saw something under the bushes, and supposing it to be a stray Cat I fired my gun, and something reared itself up, which I saw was not a Cat, but could not tell what it was; so fired again, and on going to look found to my great surprise not only one but two Otters. I brought them away and had them stuffed—they were both females, mother and daughter, one being older and bigger than the other. My brother has the mother and I have the daughter. They had made a kind of bed of dead grass under some of the thorns and willows, which had been cut down, and were curled up asleep like two kittens.—GEORGE WATTAM, Highgate House, Great Sturton, Lincolnshire.

NOTE on LAKELAND BIRDS.

Migration of the Pied Flycatcher, etc., in Northern England.—Mr. Butterfield's note on the migration of the Pied Flycatcher (*Ficedula atricapilla*) is interesting and suggestive. Is it not possible that this species may reach its breeding haunts in Westmorland and Cumberland by a route across Yorkshire from the East Coast? Birds migrating, that turned inland at the Humber mouth, might penetrate the river valleys to their source in the Pennines; then, crossing the gaps in the range, find themselves in a new network of streams, up which they would pass and settle. Birds tracking up the river Ure, for instance, would find themselves upon the source of the Eden (the old stronghold of the species) almost at once. Or, turning the other flank of Baugh Fell, they would be upon Morecambe Bay, with the Lakeland rivers open to them. In the same year in which Mr. Oxley Grabham reported the species as unusually numerous in the Yorkshire dales it likewise arrived here in great numbers. This year it was very early in its appearance. Late and cold as the season has proved all through, there was yet one fluctuation, when, for a few days in mid-April, warm, light breezes blew, which carried up objects such as dead leaves to sail high like kites. These breezes appeared to bring birds, that were then travelling, on with a rush; and a number of male Pied Flycatchers had arrived at their old nest-stations on the morning of 18th April, and were singing volubly. This is three days earlier than I have personally met with the species before. The Blackcap Warbler (*Sylvia atricapilla*) appeared on the same day.—MARY L. ARMITT, Rydal, Westmorland, 17th June 1902.

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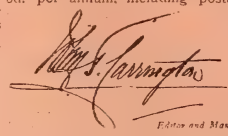

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(1893-97)
PRICE 1s. 6d. NET.
LONDON: WEST, NEWMAN & CO., 54, Hatton Garden.

Please mention 'The Naturalist' in replying to Advertisements.

C. P. H.

SEPTEMBER 1902.
(Published 1st September 1902).

No. 548.
(No. 326 of current series.)

THE NATURALIST:

A

MONTHLY JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND.

EDITED BY

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259, Hyde Park Road, Leeds;

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BRITISH MUSEUM NATURAL HISTORY

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LONDON:

Lovell Reeve & Co. Ltd., 6, Henrietta Street, Covent Garden, W.C.

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JEW'S EARS PIE AND OTHER DAINTIES.

W. NORWOOD CHEESMAN,

Selby; Member of the Yorkshire Mycological Committee.

A FEW weeks ago I accepted a long-standing invitation to spend the day with a farmer friend and taste Jew's Ears Pie for dinner. The morning was spent in viewing stock and crops, which made us late for the dinner. Our appetites were right, and the pie was right too. Certainly it contained other ingredients besides the 'Hebraic external auricular cartilages,' juicy and tender beef-steak being particularly noticeable. The 'boys' had been in to their dinner and the pie was half consumed. This inspired me with confidence, and we paid the cook the compliment of leaving the dish empty and pronouncing the repast a kingly one. During an after-dinner pipe the farmer told me that he gathered the fungi on a 'dry bank.' This aroused my curiosity and anxiety, as the Jew's Ear fungus* (*Hirneola Auricula-Judæ*) only grows on Elder wood. I secured a small dried fragment of the repast and it reminded me very much of a *Peziza*. On arriving home I submitted it to a microscopic test and found the spores in asci (*Ascomycetes*), and further examination proved the specimen to be *Peziza repanda* Wahlenb. So after all the disappointment was compensated by the fact that another species was added to the record list of my district, and a 'new to science' one to the list of known esculent fungi.

Some years since there flourished an old Selby worthy who spent his time between the workhouse in winter and gathering Watercress, Buckbean, 'Sanctuary' (*Erythræa centaurium*), and Mushrooms in summer. He answered to the name 'Three keels,' for his younger days had been spent as a freshwater sailor, and at one time he was the owner of three keels, but his thirst-quenching proclivities had induced him to swallow them.

The man was bringing into town one day, in his basket, some Champignons (*Marasmius oreades*) when a gentleman accosted him with, 'My good man, you are surely not going to sell those things to the people? You will poison them!' He replied (with a twinkle in his eye as he told me), 'Noa, aam goin' to eeat 'em mesen; aam not quite reat e' me eead.' And certainly the effect on the man's appearance of swallowing 'three keels' did not belie the latter part of his statement.

*Found plentifully on Elder bushes in Leys Wood, North Grimston. Y.N.U. Exc., 12th June 1902.

Marasmius is a very palatable dish of a delicate mushroomy flavour, but somewhat leathery and requiring some mastication; but is not at all objectionable on that account.

A noted authority on edible fungi, now gone to rest, when questioned by his friends as to how he obtained knowledge of this kind, jokingly observed that he recorded the effect of new dishes upon his wife and family before venturing himself to taste new species.

My 'three keel' friend had not the advantages for research as had the above eminent mycologist, as he 'enjoyed' single blessedness to the end of his days and died in the workhouse, aged 83, still desiring another 'keel' to swallow; nevertheless the man was deeply interested in the esculent properties of fungi, and he has certainly added a little to the stock of knowledge on this subject.

In the late autumn and early winter, when toothsome fungus dishes are scarce, large quantities of the Ring *Tricholoma* (*Agaricus grammopodius*) are found here in damp pastures growing in rings (fairy rings), after the manner of *Marasmius oreades*. My 'three keel' friend tried this and found it a good thing, and sold to the Irish field-workers in our district a good stew for a mere trifle, and since his demise other experts have arisen who collect for this class of people large quantities of the fungus; occasionally I have specimens brought to me for verification, with inquiries if they are the same as 'Three keels' discovered and recommended. I have not tasted this fungus myself, but am told by those who have that it makes a very good meal with a few potatoes, 'but that it does not require any pepper.'

The Beefsteak Fungus (*Fistulina hepatica*) is common here on Oak stumps and in sawmill yards. It has a distinctly meaty taste, and when well cooked with plenty of seasoning is not to be despised. It may easily be distinguished from all other fungi by its red beefsteak-like appearance. In size it grows from a few inches to a foot or more in diameter.

Several of our woods produce one of the English Truffles (*Elaphomyces granulatus*). These grow from six inches to a foot below the surface in light sandy soil, and may be found by a parasitic fungus (*Torrubia ophiglossoides*) appearing above the surface. Cooked any way either to flavour bread stuffing for fowls or fried whole, it forms a good substitute for the fifteen shillings per pound Truffle from France (*Tuber æstivum*).

The Morel (*Morchella esculenta*) is a rare fungus in this district, but I occasionally have a dish sent to me from Parlington Park by a woodman who tells me they readily fetch half a crown a pound at Leeds. Some time ago I examined under the microscope a drop of 'commercial' ketchup and found it consisted almost entirely of the spores of a *Coprinus,* probably *C. comatus,* certainly not *Agaricus campestris* or *A. arvensis.*

The Helvellas (*Helvella crispa* and *H. lacunosa*) and *Hydnum repandum,* all well-known edible fungi, are only found sparingly here, and it is many years since I tasted them cooked; but they make an agreeable bonne bouche during a long tramp on a fungus foray, when the sandwich-box is empty and the flask is dry.

If anyone has the courage to ask his cook to prepare a breakfast dish of young puff-balls (all species are good) they will be found equal to button Mushrooms, only they must be young and slice up white; when brownish and old, and when the spores are formed, they acquire a musty flavour.

I have tried a mixed dish of *Clavariei* (club and coral-shaped fungi), with the result that I have great faith in the possibilities of the whole family as a food product.

As Nature has with such a lavish hand scattered fungi over our land, and indeed over all our globe, it seems a pity that our knowledge of the edible properties of fungi is so scanty and uncertain. It is true there is no royal road to the discrimination of the esculent from the poisonous species; but, as we find amongst the Phanerogams Orders like *Ranunculaceæ, Papaveraceæ, Umbelliferæ, Solanaceæ, Scrophularineæ, Euphorbiaceæ,* etc., containing some distinctly poisonous species, and nearly all the species of those orders of a suspicious character, so we find other natural orders like *Cruciferæ, Rosaceæ, Compositæ, Borragineæ,* producing species none of which are poisonous, but all innocuous, and many valuable as food plants. Cannot in like manner the fungi be divided into Divisions, Orders, Families, or at least Genera having poisonous or non-poisonous properties? Of the former we have *Amanita, Russula, Boletus,* etc., and of the latter the genera *Psalliota, Coprinus, Marasmius, Hydnum, Fistulina, Hirneola, Tuber, Morchella, Helvella,* etc., and the Orders *Clavariei, Trichogastres,* etc.

May I suggest to the Chairman and Secretary of our Mycological Committee of research that this branch of economic botany be considered at the next Fungus Foray, which takes place at Arncliff, near Whitby, in September.

1902 September 1.

NOTES on YORKSHIRE BIRDS.

Rook with Recurved Beak near Barnsley.—On 17th May I saw, perched on one of the telegraph wires near the Lancashire and Yorkshire Station here, a Rook (*Trypanocorax frugilegus*) with the beak much recurved. It is impossible for me to say whether the malformation affected both upper and lower mandibles, probably the former only. The length of the beak was fully twice that usual in the bird, and gave to it a most curious appearance.—E. G. Bayford, Barnsley, 15th June 1902.

Unusual position for Nest of Sedge-Warbler, Hornsea Mere.—During the excursion of the Hull Scientific and Field Naturalists' Club to Hornsea Mere, on 28th June, a nest of a Sedge-Warbler (*Acrocephalus phragmitis*) was noticed in a Willow tree, at a height of ten feet from the ground. It contained four eggs and had every appearance of the nests usually built among the reeds, with the exception that it was built amongst the young shoots of the Willow tree. The tree was situated many yards from the water's edge.—T. Sheppard, Municipal Museum, Hull, 2nd July 1902.

Hull Museum: the Swailes Collection of Eggs.—Mr. George Swailes, of Beverley, has presented to the Hull Municipal Museum the collection of eggs of British-breeding birds, got together during twenty years' collecting by his brother, the late Mr. Johnson Swailes, of Beverley. There are nearly 1,300 eggs, and many of them are of great value and local interest. The collection is well known to north country ornithologists, who will be pleased to hear that it has been permanently secured to the district through the kindness of Mr. G. Swailes.—T. Sheppard, Municipal Museum, Hull, 4th July 1902.

Hawfinch at Huddersfield.—Noticing that the peas in my garden were being rapidly taken by birds, last evening I had them netted. This morning, on going past them, my son found that a Hawfinch (*Coccothraustes coccothraustes*) had got beneath the nets, and he was able to catch it at once. It was an adult specimen in beautiful plumage. After an examination of it in the house, during which it showed me the strength of its powerful beak on my flesh, I set it at liberty. The peas were so surrounded with netting we hoped they would effectually keep off birds, and it shows the fearless boldness of this species that it should at once discover a small opening and get under. A single Sparrow (*Passer domesticus*) was in with it, but my son says there were a number of other sparrows outside vainly endeavouring to get in.

I recorded a young Hawfinch from close by here last year; and I had previously seen one on another side of the town, so apparently the bird is not so rare here as we formerly supposed.—Geo. T. Porritt, Crosland Hall, near Huddersfield, 9th August 1902.

NOTES on LAKELAND BIRDS.

Hawfinch in Westmorland.—On the authority of Mr. W. Duckworth, of Penrith, it is recorded that a Hawfinch (*Coccothraustes coccothraustes*) was found dead on a farm in North Westmorland on 15th April last.—T. Sheppard, Hull, 22nd July 1902.

Hawfinches in Westmorland.—It may be of interest to note, in connection with Miss Armitt's remarks on the Hawfinch (*Coccothraustes coccothraustes*) as breeding at Rydal, Westmorland, that just about the time of receiving my 'Naturalist' for August a young specimen of this bird was placed in my hands. It had been caught in a Sparrow-trap along with Sparrows at Levens, in South Westmorland. Similarly, about a fortnight previously, another specimen was caught in exactly the same way and at the same place. Last year another young one was shot near Arnside; this was stuffed and is now in my possession.—G. Stabler, Levens, Westmorland, 13th August 1902.

YORKSHIRE NATURALISTS AT COXWOLD AND KILBURN.

Rev. T. AINSWORTH BRODE, B.A.,
Vicar of St. John's, York.

The Whit-Monday Excursion of the Yorkshire Naturalists' Union is generally a popular and well-attended outing, and this year's fixture was no exception to the rule. Those who were not deterred by the doubtful character of the weather had their reward in a very enjoyable day. The weather was not perfect, but a mackintosh and a pair of stout boots were provision enough to make against the one or two heavy showers which were the only really unpleasant features of the day. As our worthy President said, 'Think what it might have been!' Then again, beyond the natural beauties of the locality and apart from the objects of varying interest to members as naturalists, there was the added pleasure of seeing the pretty village of Coxwold, the fine church with its octagonal tower, and the house where Laurence Sterne wrote 'Tristram Shandy' in 1758; and to some of the party the no less pleasure of visiting Byland Abbey (which was built about 1180 A.D. by some monks who originally came from the Abbey of Furness), the ruins of which are even now of great beauty. On these and other points of antiquarian interest those who were able to spend the week-end in the neighbourhood scored considerably.

The main body of naturalists, under the able guidance of Mr. J. Richardson, went by a pathway behind the village of Coxwold across the fields and into the lane by Kilburn Thicket to Oldstead. There they parted into two divisions, one of which went to Scotch Corner and on to Roulston Scar, returning to Coxwold viâ Kilburn; and the other, reinforced at Oldstead by some entomologists and belated botanists, went up Oldstead Bank, and finding the time short, made for Coxwold by the lane between Oldstead and High Kilburn, joining the returning geologists just outside Kilburn village.

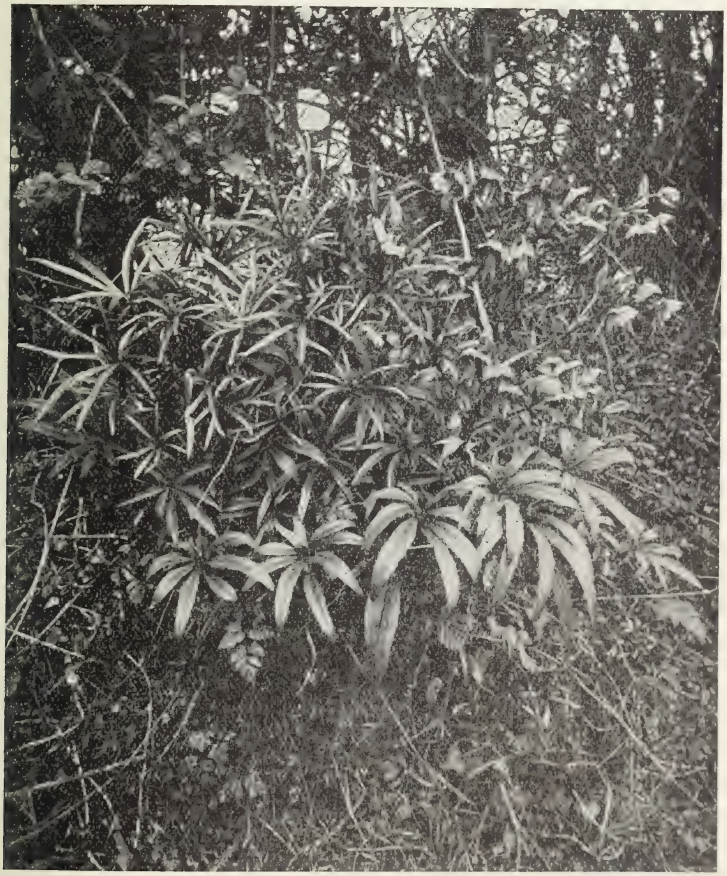
Mr. T. W. Woodhead, F.L.S., reported that the botanists had an excellent day, but it soon became evident that the time at their disposal was all too short to examine in detail the large and interesting tracts of country included in the excursion. In consequence of this fact attention was largely confined to the hedgerows, which proved luxuriant and varied, and well repaid research. After leaving the station, where a fine patch of

Galium erectum was seen, abundance of *Stellaria nemorum* occurred in the hedge where the path began, close to the village, while here and there might be seen *Stellaria media* var. *neglecta*. Close by was noted *Rubus alpinus*. *Prunus spinosa* (Blackthorn) was a striking feature, and *Ribes grossularia* (Gooseberry) frequently recurred. In the old pastures, across which the path led, *Ophioglossum vulgatum* (Adder's Tongue) and *Botrychium lunaria* (Moonwort) were plentiful; and the horse-ponds yielded *Veronica Beccabunga* (Brooklime), *Alisma plantago-aquatica* (Water Plantain), and a few plants of *Ranunculus hederaceus* (Ivy-leaved Crowfoot). It may be of interest to note that in the last field before entering the lane, which goes to Oldstead and skirts Kilburn Thicket, a sitting Water-hen was disturbed, and her nest was found containing four eggs. Coming into the lane there was only just time to peep into the woods near by with their well-grown Pines and carpet of Bluebells. Just beyond Kilburn Thicket, *Myosotis collina* (Early Field Scorpion-grass) was seen, and further on, where the lane dipped down, *Lathræa squamaria* (Toothwort) on roots of Elms. On the ditch side *Chrysosplenium alternifolium* (Alternate-leaved Golden Saxifrage) was fairly abundant, and in the neighbouring damp ground *Equisetum maximum* (Great Water Horse-tail) was sending up its fine fertile cones in advance of its stately barren shoots. Near Oldstead a plant or two of *Onopordon Acanthium* (Cotton Thistle) was found, also a fine bank of *Geranium phæum* (Dusky Cranesbill).

Along the route *Ranunculus auricomus* (Goldilocks) was common, with occasionally *Listera ovata* (Twayblade), *Orchis mascula* (Early Purple Orchis), *Adoxa Moschatellina* (Moschatel), *Myosotis sylvatica* (Wood Scorpion-grass), and a specimen or two of *Lithospermum officinale* (Gromwell).

Primroses were at their best and made a magnificent show, but the sight of the day was *Helleborus fœtidus* (Stinking Hellebore) on Oldstead Bank, just in its prime and in unusual abundance. In the hedges here were seen *Daphne Laureola* (Spurge Laurel), and *Berberis vulgaris* (Barberry), and in one spot *Primula elatior* (Oxlip). At Scotch Corner, a hill capped with Ling, Bilberry, and Gorse, were found *Erophila vulgaris*, *Cerastium semidecandrum*, and a curious form of barren Strawberry, with large, foliaceous, and deeply serrate sepals, and very small yellow petals. On the hill slopes were large patches, uniformly brown with the dead fronds of Bracken, and on the opposite hill a very regular plantation of alternating rows of

Pines and Larches. From the Corner the course lay across the moor, to the right being a plantation of Pine with an undergrowth of Ling and a little Bilberry; to the left, parts reclaimed and sown with Oats; but for the rest an extensive plain covered for miles with an uniform sheet of Ling. Near Roulston Scar



***Helleborus fœtidus* in fruit, hedge-bank on Oldstead Bank.**
From photograph by W. B. Crump, M.A., 19th May 1902.

a few patches of *Empetrum nigrum* (Crowberry) were met with in flower, while at the foot of the Scar was another glorious patch of Primroses.

As regards the Cryptogamic department the district proved very interesting to the bryologist also. In fact it was hard work to get the 'moss-men' along the route in anything like

time. Mr. W. Ingham, B.A., reported the following varied list:—By the road-side from Coxwold Station to Roulston Scar viâ Low Kilburn the predominant Mosses are *Eurhynchium prælongum* (fruiting freely on a bank), *Brachythecium rutabulum, Hylocomium triquetrum, Eurhynchium Swartzii, Hypnum cuspidatum* (found in fruit by Mr. H. J. Wilkinson), and *Amblystegium filicinum.* Two rarer Mosses of the road-side are *Barbula sinuosa* (Braith.) occurring in small brown patches on stones, and *Orthotrichum stramineum* (Hornsch.) both found by Mr. Barnes. On the lower slopes of the Scar occur these Mosses—*Plagiothecium latebricola* (B.&S.), growing with *Tetraphis pellucida* on rotten wood in shade; *Campylopus pyriformis* (Brid.), fruiting freely on the side of a cutting; *Ceratodon conicus* (Lindb.), on wet clay; *Tortula subulata* (Hedw.), *Bryum cæspiticium,* in fruit; *Barbula rigidula, Weissia viridula* (Hedw.); *W. microstoma* (C.M.) with its var. *brachycarpa* (Schp.); *Mnium punctatum*; *Pleuropus sericeus,* in fruit; *Isothecium myurum*; *Eurhynchium murale* and *E. confertum.* On a large stone in shade grows a very interesting little Moss, *Plagiothecium denticulatum* var. *densum,* in fruit, with short and striate capsule. On the bases of tree trunks may be seen the large golden masses of *Plag. sylvaticum,* and on the sloping banks the same Moss becoming short-stemmed and of very compact habit. *Plag. denticulatum,* typical form, fruits by the road-side. Near the top of the Scar two minute Mosses, *Seligeria pusilla* and *S. recurvata,* are found. On the rock under the summit are large patches of *Neckera crispa* var. *falcata,* which looks very much like a Hepatic, and is an invariable index of a limestone habitat. By its side grows a very pretty and small form of *Hypnum molluscum,* probably var. *gracile* (Boul.). At this particular spot several hepatics of luxuriant growth may be seen, viz., *Porella platyphylla,* the smooth-coated *Reboulia hemisphærica, Lepidozia reptans,* and *Metzgeria pubescens.* On the top of the Scar in a large pool is a fine growth of *Sphagnum cuspidatum* var. *submersum* (Schp.), of rich brown colour and with the habit of *Sph. Torreyanum,* associated with the glossy brown *Hypnum fluitans,* group *Amphibium* var. *Jeanbernati* (Renauld).

To this list Mr. M. B. Slater, F.L.S., adds the following plants, seen on a different route:—Mosses: *Ceratodon purpureus, Mnium hornum* (both male and fruit), *Catharinea undulata, Tortula muralis, Grimmia pulvinata, Hypnum striatum, Amblystegium serpens,* and *Plagiothecium denticulatum* var. *aptychus.* Hepatics: *Lepidozia reptans* and *Lophocolea heterophylla.*

In the Mycological Section some good work was done, allowing for the season. To the general naturalist the most interesting fungus of the day was the Edible Morell, which attains a very large growth in this district. The writer has often eaten it when he lived in Hertfordshire, and can testify to its pleasing and delicate flavour as an adjunct to the breakfast rasher. He was accustomed to gather it about half the size of the specimens seen at Oldstead, probably in a younger stage. Mr. T. Gibbs reports that the date was too early for a large 'bag' of fungi, so the list given below must be considered fairly satisfactory. The district, with its fine woods, its well-watered valleys and rich meadows, looks as if it would well repay a regular 'foray.' The most productive ground met with was a little wooded ravine near the hamlet of Wass, with rocky and precipitous sides, and containing a stony stream-course (then dry). Here on the dead wood and herbage the smaller Discomycetes abounded, none however being of special interest. A fine large *Peziza* (*Peziza venosa* Pers.) was found in a quarry in the same wood. Some very fine specimens of the Morell (*Morchella esculenta* Pers.) were a prominent feature on the hedge banks near Oldstead. The Agarics were fairly represented for so early in the year, and included the curious and rather uncommon *Cantharellus infundibuliformis* Fr. The following 32 species were identified :—

Lycoperdon Bovista L.
Agaricus campestris L.
Hypholoma fasciculare Huds. On dead wood.
Psilocybe spadiceo-grisea Schff.
Coprinus atramentarius Fr.
Coprinus radiatus Fr. On dung.
Coprinus plicatilis Curt.
Marasmius oreades Bolt. In large 'Fairy ring' in meadow.
Cantharellus infundibuliformis Pers. In Cam Wood.
Poria vaporaria Fr. On dead wood.
Dacryomyces stillatus Duby. On dead wood.
Lasiosphæria ovina Pers. On dead wood.
Leptosphæria acuta. On dead stems of Nettle.
Nectria cinnabarina Fr. Conidial stage on dead twigs.
Xylaria hypoxylon. On dead wood.
Ditiola radicata Fr. On rotten wood.
Hysterium ilicinum DeNot.
Stegia ilicis Fr. Both on dead Holly leaves.
Peziza venosa Pers.
Helotium cyathoidum Bull. On dead herbaceous stems.
Mollisia cinerea Batsch.
Dasyscypha virginea Batsch.
Dasyscypha hyalina Pers. The last three on dead wood.
Ascophanus testaceus Phil. On Rabbit dung.
Ascobolus glaber Pers. On Rabbit dung.
Orbilia leucostigma Fr. On dead wood.
Orbilia succinea Quelet. On dead stems of Nettle.
Rhytisma acerinum Pers. On dead Sycamore leaves.
Morchella esculenta Pers.
Cystopus candidus Lév. On Shepherd's Purse.

Sporodinia aspergillus. On decaying Agarics.

Stemonitis Friesiana DeBary. On dead wood.

The conchologists, though few in number, worked assiduously, and several additions were made to the previous records for the district. Perhaps the most interesting capture was *Helix lapicida,* taken near Roulston Scar, as this snail, even where it is known to exist, is difficult to find 'at home.' Mr. J. E. Crowther, President of the Section, gives the following list of 29 species :—

Arion ater.
Arion hortensis.
Arion circumscriptus.
Agriolimax agrestis.
Vitrina pellucida.
Vitrea cellaria.
Vitrea alliaria.
Vitrea nitidula.
Vitrea crystallina.
Vitrea fulva.
Pyramidula rotundata.
Helicigona lapicida.
Helicigona arbustorum.
Helix aspersa.
Helix nemoralis.
Helix hortensis.
Hygromia hispida.
Helicella caperata.
Buliminus obscurus.
Pupa cylindracea.
Clausilia bidentata.
Clausilia laminata.
Cochlicopa lubrica.
Carychium minimum.
Planorbis albus.
Planorbis spirorbis.
Limnæa peregra.
Sphærium corneum.
Pisidium fontinale.

Among the members of the section for Vertebrate Zoology were some who had the advantage of the longer time which a week-end stay at Coxwold gave them. Mr. Kenneth McLean reports that the absent members certainly missed a splendid opportunity for the study of bird and animal life. The district is so diversified and the changes so abrupt that many kinds of birds were found 'near neighbours' which are generally separated by great distances. For instance, the sheltered wooded valleys are inhabited by Willow Wren, Wood Wren, Whitethroat, Tits, and Finches in large numbers, while but a few hundred yards above, on the wide-stretching moors, is the habitat of the Red Grouse, Curlew, Ring Ousel, Wheatear, etc.

Byland Abbey was seen to shelter a much larger number of inhabitants than ever it had in its bygone days of magnificence, for every hole, crevice, and cranny is now the home of Jackdaw, Starling, or Sparrow, and the grand old ruins were alive with the call of hungry youngsters.

Although many of the tree trunks in the neighbourhood bore the marks of the Woodpecker's strong bill, not a single specimen was seen or heard. Amongst the Spruce and Larch on the richly-wooded hill-side was seen the beautiful little Goldcrest, active in search of food, while the twitter of the Wood Wren

(*Phylloscopus sibilatrix*) was heard on all sides. Considering the time of the year, perhaps the most interesting bird noted was the Woodcock (*Scolopax rusticola*). The nest was not found, but it was evidently breeding in the immediate vicinity, and it is known to do so in this district from year to year. Although most of the summer visitors were seen, including the Cuckoo and Corncrake, the lateness of the season was emphasized by the appearance of a small flock of Fieldfares. In some late springs they may be seen near the coast, even towards the end of May, but for them to be seen so far inland as late as 19th May is very unusual. Forty-five different kinds of living birds were noted in all, and some of the party came across the shrivelled remains of Hooded Crows, Jays, Magpies, Carrion Crows, Sparrow Hawks, Kestrels, etc., the usual victims of the gamekeeper. Eight species of mammalia were seen, alive and dead, viz.:—Fox, Stoat, Weasel, Rat, Water Vole, Rabbit, Hare, and Squirrel.

Owing to the lateness of the season, already noticed, the entomologists did little or nothing with Lepidoptera. Mr. M. Lawson Thompson, F.E.S., President of the Section, reports that the following species of Coleoptera were met with in working along the route. He adds that they are all common beetles, the day proving unfavourable to really successful investigations.

Leistus rufescens F.
Harpalus latus L.
Pterostichus madidus F.
Pterostichus vulgaris L.
Pterostichus nigrita F.
Anchomenus dorsalis Müll.
Bembidium lampros Herbst.
Dromius meridionalis Dej.
Cercyon melanocephalus L.
Baptolinus alternans Grav.
Homalium rufipes Fourc.
Homalium rivulare Payk.
Necrophorus humator F.
Adalia obliterata L.
Coccinella 10-punctata L.
Coccinella 7-punctata L.
Omosita discoidea F.
Meligethes æneus F.
Meligethes picipes Sturm.
Agriotes obscurus L.
Agriotes pallidulus Ill.
Dolopius marginatus L.
Lema lichenis Voet.
Batophila rubi Payk.
Plectroscelis concinna Marsh.
Anaspis rufilabris Gyll.
Apion dichroum Bed.
Apion humile Germ.
Otiorrhynchus picipes F.
Polydrusus micans F.
Polydrusus tereticollis DeG.
Polydrusus cervinus L.
Phyllobius urticæ DeG.
Barynotus elevatus Marsh.
Liosoma ovatulum Clairv.
Cœliodes quadrimaculatus L.
Ceuthorrhynchus contractus Marsh.
Ceuthorrhynchus troglodytes F.

The Geological Section took a different route to Roulston Scar, and headed by Mr. Percy F. Kendall, F.G.S., went straight up the village, past Shandy Hall, then on to the Snapes

Quarry, Kilburn, and thence to the Scar. Mr. J. E. Hall reports that the geologists made a start by inspecting the quarry at the back of Shandy Hall, where about 20 feet of the Calcareous Grits are exposed. Along the Kilburn Road, where water-mains have been recently laid, several erratics were noted, including Chert, Mountain Limestone, and various specimens of Lake District lava, ash, and schist. On reaching Snape Quarries a small part of the east face produced *Ammonites triplex, Am. cordatus, Linia rigida,* and a few Gasteropods. In a recently-worked section of sandstone near the summit *Am. perarmatus* (?), *Belemnites abbreviatus,* and spines of a *Cidaris* were noted. In the main quarry there is a fine section of the Upper Calcareous Grits; and looking up at the towering escarpment of Roulston Scar, it was difficult to realise that the rocks here exposed are more recent than those which, in the Scar, lie nearly 600 feet above. But such is the case; for though it was impossible to trace the Coral Rag, which was formerly exposed at the base of the quarry, yet the finding of its characteristic Coral (*Thecosmilia annularis*) by Mr. E. Hawkesworth proved its existence; and the visit paid to an old working of the Jet Shales of the Upper Lias, in a neighbouring field, helped the party to realise the remarkable character of the fault in a still more vivid manner.

At the Fauconberg Arms Hotel, Coxwold, the workers gathered together for 'high tea' after their pleasant tramp; and when ample justice had been done to the repast, during which friends renewed acquaintance and enjoyed comparing notes, the usual sectional meetings took place, followed by the general meeting, over which Mr. P. F. Kendall presided with characteristic ability and geniality. Ten affiliated societies answered the roll-call read by Mr. E. Hawkesworth, the worthy secretary; and after four new members of the Union had been elected, the customary brief but very interesting reports of the results of the excursion were given by officers of the various sections. These reports, made on the spot and by experts in their own particular subject, are of necessity valuable; and it is hoped that the detailed form in which they appear here may extend and preserve their value for a wider circle of naturalists, beside serving to recall the incidents of a very pleasant day with nature. All who were present supported with heartfelt sincerity the vote of thanks to the landowners, whose kind permission to go over their estates made such an enjoyable excursion possible.

YORKSHIRE COLEOPTERA IN 1901.

M. LAWSON THOMPSON, F.E.S.,

Saltburn-by-the-Sea; *Hon. Secretary Yorkshire Coleoptera Committee.*

THE following is the Report for 1901 of the Yorkshire Coleoptera Committee :—

Much good work has been done by the Yorkshire Coleoptera Committee during the past year, and the meetings of the Yorkshire Naturalists' Union at Brough, Wykeham, Wetherby, and Conisborough were attended by some of its members. An account of the Brough meeting is published in 'The Naturalist' for 1901 (pp. 227-8), and contains Mr. E. G. Bayford's list of 30 species taken on that occasion. Mr. Bayford also attended the Wykeham meeting, spending the week-end there. His list is published in Mr. J. Waddington's account of the excursion ('The Naturalist' for 1901, pp. 296-7), and consists of 48 species. Of these *Omosiphora limbata* F. and **Hylastes ater* Payk. are of particular interest. At Wetherby I met with 47 species, of which two—*Microglossa pulla* Gyll. and *Apion spencei* Kirby—are not included in Mr. F. A. Lees' account of the meeting ('The Naturalist' for 1901, pp. 329-30), having only recently been determined. The coleopterists present at the Conisborough meeting were Messrs E. G. Bayford and H. Ostheide, who reported finding 16 species near Conisborough ('The Naturalist' for 1902, p. 120). Of these *Bibloporus bicolor* Denny is worthy of note. Upper Teesdale has also been visited with very interesting results, as this district contains the highest land in the county.

With regard to observations on this subject already published I must refer Yorkshire coleopterists to the list of coleoptera by Messrs. T. Stainforth and H. E. Johnson in the Transactions of the Hull Scientific and Field Naturalists' Club for 1901 (Vol. I., No. IV., pp. 239-243). It enumerates 148 species taken in the neighbourhood of Hull and on the foreshore of the Humber. Many are of extreme interest owing to the maritime locality in which they are found. A previous list, which should also be consulted, was published by the late Mr. C. W. Russell in the Transactions for 1900 (Vol. I., No. III., pp. 129-134).

The following notes from various parts of the county have been selected from material at my disposal and certain observations of my own—all referring to the year 1901. Throughout

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this report I have marked with an asterisk species which do not appear to have been previously recorded for Yorkshire :—

***Platyderus ruficollis** Marsh. Bridlington, on the coast in September (W. C. Hey).

***Calathus melanocephalus** L. var. **nubigena** Hal. Upper Teesdale, near the summit of Mickle Fell in May (M. L. Thompson).

***Calathus micropterus** Duft. Upper Teesdale, near Cronkley, in September (M. L. Thompson).

***Pristonychus terricola** Herbst. Among sand and clay on the coast near Bridlington Quay—rather a strange situation in which to find this insect (W. C. Hey).

***Bembidium atrocæruleum** Steph. Bridlington (W. C. Hey).

***Bembidium stomoides** Dej. Upper Teesdale, on the margin of a moorland stream near Cronkley in September (M. L. Thompson).

***Patrobus assimilis** Chaud. Upper Teesdale, on the slope of Mickle Fell, in May (M. L. Thompson).

***Brachinus crepitans** L. Mr. A. Robertshaw picked up a living specimen of this south country insect near Midgley. It had probably been imported into the district with timber, of which a large quantity is brought from various parts of the country.

***Hydroporus melanarius** Sturm. Upper Teesdale, in a mossy pool on Mickle Fell, in May. In the same locality occur *H. morio* Dej. (*atriceps* Crotch), *H. obscurus* Sturm, *H. gyllenhalii* Schiödt., *H. tristis* Payk.—all moorland species (M. L. Thompson).

***Agabus didymus** Ol. Filey (W. C. Hey).

***Ilybius guttiger** Gyll. Upper Teesdale, in a pool at Cronkley. May (M. L. Thompson).

***Phihydrus maritimus** Thoms. Eston Marsh, in brackish water near the sea (M. L. Thompson).

***Hydræna pygmæa** Wat. West Ayton, under a stone in the river, September (W. C. Hey).

***Homalota fragilis** Kr. Saltburn, on the margin of a stream, July (M. L. Thompson).

***Staphylinus cæsareus** Ceder. Langdale End, near Scarborough, running on a sandy road, in May, one specimen (W. C. Hey).

Ocypus fuscatus Grav. Eston Marsh, near the sea, one specimen under a stone, in September (M. L. Thompson).

Xantholinus longiventris Heer. Bridlington (W. C. Hey).

****Lathrobium atripalpe*** Sharp. Upper Teesdale, near Cronkley, one specimen under a stone on the moor, in September (M. L. Thompson).

Bledius dissimilis Er. Bridlington, on the coast (W. C. Hey).

Necrodes littoralis L. A specimen was taken at Barnsley, attracted by electric light (E. G. Bayford).

Halyzia conglobata L. (***14-punctata*** L.). Midgley (A. Robertshaw).

Geotrupes typhæus L. Lonsdale, near Kildale in Cleveland (O. C. Hudson).

Rhagonycha unicolor Curt. (***translucidus*** Brit. Cat.) Saltburn Wood, in July (M. L. Thompson).

Malthodes mysticus Kies. Saltburn, in June (M. L. Thompson).

****Malthodes misellus*** Kies. Saltburn Wood, by sweeping, one specimen, in June (M. L. Thompson).

Dasytes ærosus Kies. (***plumbeoniger*** Goeze). Saltburn, in June (M. L. Thompson).

****Chrysomela gœttingensis*** L. Edlington Wood, near Doncaster, one specimen picked up dead on 1st August (E. G. Bayford, 'The Naturalist' for 1902, p. 64).

Chrysomela hyperici Forst. Eston-in-Cleveland (O. C. Hudson).

****Anaspis garneysi*** Fowler. Saltburn Wood, on Whitethorn, in June, one specimen (M. L. Thompson).

Apion æneum F. Seamer, near Scarborough, on *Ballota nigra,* in September (W. C. Hey).

Apion æthiops Herbst. Saltburn Wood, in June (M. L. Thompson).

****Sitones griseus*** F. Redcar sandhills, in September (M. L. Thompson).

Hylesinus fraxini Panz. Bridlington (W. C. Hey).

NORTHERN NOTES and NEWS.

We have to mourn the loss which 'The Naturalist' has sustained in the decease of a member of its editorial staff, Mr. C. P. Hobkirk, F.L.S., who, in conjunction with Mr. G. T. Porritt, F.L.S., was the first editor of the present series, 1875 to 1884, and who, previous to that, was the conductor of the series published 1864 to 1867. We hope to print memorial notices in an early number.

NOTE on LINCOLNSHIRE FUNGI.

***Geaster fornicatus* at Torksey, Linc., N.**—Mr. F. Mills sends from Torksey (Div. 6 West) the curious-looking fungus, *Geaster fornicatus* Fr., gathered by him last week. Owing to the inner layer of the sporidium becoming arched, and attached to the outer layer by the tips of the rays only, the appearance is that of a man with large head, small body, and four legs, standing on the extremities of a four-pointed saucer. Berkeley says of it, 'Not common, though found occasionally in as high a latitude as Nottinghamshire.'—W. FOWLER, Vicarage, Liversedge, 25th August 1902.

NORTHERN NOTES and NEWS.

Mr. W. H. Wheeler, of Boston, Lincolnshire, is the author of a recently-published work on 'The Sea-Coast: (1) Destruction, (2) Littoral Drift, (3) Protection.'

The 'Flora of the East Riding of Yorkshire,' by Mr. J. F. Robinson, Botanical Recorder of the Hull Scientific and Field Naturalists' Club, is about to be issued. It extends to nearly 250 pages, and will be the first 'Flora' of the East Riding. Lees' 'Flora of West Yorkshire' and Baker's North Riding Flora are well known to our readers.

An effort is being made by the naturalists and others at Barnsley to form a permanent public Museum in that town. The matter has been discussed at a meeting of the Corporation, at which Mr. E. G. Bayford, the President of the Barnsley Naturalists' Society, stated that there would be no difficulty in the Society's collections being placed in the proposed Museum. We wish our Barnsley friends success in their efforts.

It is with great pleasure that we learn that Mr. Alfred Harker, M.A., F.G.S., Fellow of St. John's College, Cambridge, and of the Geological Survey of Scotland, has been honoured with a Fellowship of the Royal Society. Mr. Harker's connection with this journal is well known to the readers. He has contributed to our pages many most important papers on the Igneous Rocks of the Lake District, etc., and for many years edited the annual 'Bibliography of Geology and Palæontology.'

The Museums Association met at Bradford from 14th July to 17th July, and received a hearty Yorkshire welcome from the Bradfordians. Representatives from Museums all over the country were present, Yorkshire being represented by the curators from York, Hull, and Sheffield. Several interesting papers were read and discussed.

The most important of these was in reference to the future of the Museum to be housed in the Cartwright Memorial Hall, now being erected at Bradford. Mr. Butler Wood opened the discussion, and the various curators expressed their views as to the best course to adopt in reference to the proposed museum. The general opinion was that the museum should be devoted to natural history, but more particularly to the natural history, geology, and antiquities of the district around Bradford. With this latter we heartily agree. It is utterly impossible for a provincial museum to imitate the British Museum in its scope, and unquestionably the best manner in which the proposed Bradford Museum can do good work, is by illustrating the history of the district in which it is situated. And even for this purpose alone, the space at disposal for museum exhibits in the Cartwright Memorial Hall will soon prove inconveniently small.

ADDITIONS TO THE BOWLAND FLORA.

JOSEPH F. PICKARD,

Leeds.

SINCE my article which appeared in the February number of 'The Naturalist' for 1901, I have spent four days in the district of Bowland, at the beginning of June of this present year, and worked from Slaidburn to Whitewell and the boundary of the area at Mitton. The critical species have been examined by Mr. F. Arnold Lees, and I am indebted to Rev. W. Crombie, of Newton, for various notes from his observations during the past three years.

Aconitum Napellus (local name, 'Old Granny's Nightcap'). Casual. Bank of Hodder below Whitewell.

Chelidonum majus. Waste ground, Newton-in-Bowland (W. Crombie, 1901).

Sisymbrium Thalianum. Dry limestone walls and rocks, Slaidburn, Dunnow, Whitewell.

Polygala serpyllacea. Trough of Bowland, Lamb Hill, Clapham Road, near Bowland Knotts. Not uncommon.

Cerastium glomeratum. Pastures near Dunsop Bridge.

Geranium molle. Slaidburn, Dunnow.

Geranium dissectum. Slaidburn, Dunsop.

Acer campestre. Mitton Road below Bashall Town.

Prunus Avium. Plantation, Lamb Hill, near Bentham Road. Naturalised and spreading.

Rubus Chamæmorus. Plentiful, summit of Whitendale Top, 1,784 ft., descending to 1,400 ft. on slopes of Lamb Hill, near Bentham Road.

'Knouts' is the usual vernacular name in Bowland.

Saxifraga Geum. Hodder Bank below Whitewell.

Saxifraga granulata. Old lane near Newton Bridge.

Chrysosplenium alternifolium. Whitewell Woods.

Ribes grossularia. Shay Wood, Slaidburn; Whitewell Woods. Native?

Ribes alpinum. Shay Wood. Probably planted.

Ribes nigrum. Near Heaning, Browsholme Height, Shay Wood. Not uncommon in moist shady woods, generally near habitations.

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Pimpinella major. Newton Lane, Whitewell, Bashall, Mitton. Not uncommon.

Œnanthe crocata. Whitewell.

Æthusa Cynapium. Hedge-bank near Slaidburn Church.

Cornus sanguinea. Hedge-side between Bashall Eaves and Mitton.

Galium Mollugo. Very fine near river Hodder, Dunsop Bridge.

Tanacetum vulgare. Newton-in-Bowland, road-side below Bashall Town.

Hieracium rubescens = ***sylvaticum.*** Rocks, Whitewell.

Hieracium vulgatum. Trough of Bowland, Lamb Hill, Bowland Knotts, etc. Common.

Hieracium murorum. Dunsop Bridge.

Taraxacum officinale var. ***lævigata.*** Sandy banks near Trough of Bowland, Whitewell.

Lactuca muralis. Dunnow Wood, Shay Wood, Whitewell, Bashall Town, Browsholme.

Lysimachia Nummularia (local name, 'Creeping Jenny'). Road-side and plantation, Mitton Road, below Bashall Eaves.

Lathræa Squamaria. Woods below Whitewell.

Salix pentandra. Heaning brook, Lamb Hill, Dalehead, etc., not uncommon.

Salix phylicifolia. A few trees by Croasdale brook above Slaidburn.

Salix purpurea. Not uncommon.

Juniperus communis. Reported (under local name, 'Savin Tree') from Whitendale, but I have not yet seen it.

Habenaria viridis. Pasture between Heaning and Newton (W. Crombie, 1901).

Luzula vernalis. Whitewell Woods.

Eriophorum angustifolium var. ***minor.*** Moors near Cross o' Greets, Bentham Road.

Carex pilulifera. Near Dunsop Bridge.

Carex verna. Near Dunsop Bridge.

Carex pendula. Very fine, Whitewell Woods, by the Hodder.

Carex sylvatica. Whitewell Woods.

Carex flava. Dunsop Bridge.

Melica uniflora. Dunsop, Whitewell, Browsholme, etc., not uncommon.

Asplenium viride. Specimens shown to Mr. Crombie by farmer of Trough House, Bowland Trough, which were brought down from high gritstone rocks at head of Brenand Valley, 1901.

Equisetum maximum. Much more abundant at Whitewell than at first supposed and very fine, 1902.

NOTES on LANCASHIRE FISHES.

Shark on the North Lancashire Coast.—A man seeking for 'flukes' between Tridley Point and Meaness early in July, found in a hole in 5 ft. water a dead Shark (*Lamna cornubica* Gm.), about 5 ft. long. A dangerous customer to face alive with a fluke prod in a place with more turning room. Macpherson's 'Fauna,' 466-7, gives no Lancashire locality.—S. L. Petty, Ulverston, 28th July 1902.

Sturgeon on the North Lancashire Coast.—On 18th July some fishermen netting for Salmon caught a Sturgeon (*Acipenser sturio* L.) near Tridley Viaduct. According to the account in the 'Advertiser,' 24th July, the fish was 8 ft. long, about 5 ft. in girth, and was said to weigh about 3 cwt. I heard after the capture that the weight was really above 3½ cwt. It went to Barrow and was sold there at small prices. The only one mentioned by Macpherson, 'Fauna,' 470-71, for North Lancashire is a small one—60-70 lbs.—and caught in 1842.

The share once claimed by the King was declined on account of his Majesty's absence from London. The Duke of Devonshire, the owner of the Leven fishing rights, wrote pleading absence also. I hear that a few years ago a small example of the same fish was obtained in about the same locality.

The head has been obtained by Mr. Scott for preservation for the Fishery Laboratory.—S. L. Petty, Ulverston, 28th July 1902.

NOTE on YORKSHIRE FISHES.

Fishes in the Parish of Halifax.—The following is a list of the fishes I have met with in the parish of Halifax :—

Perca fluviatilis. Perch. Uncommon.
Cottus gobio. Miller's Thumb. Plentiful.
Gastrosteus aculeatus. Stickleback. Very plentiful.
Cyprinus carpio. Carp. Uncommon.
Carassius auratus. Gold Carp. Common in warm waters such as mill dams.
Gobio fluviatilis. Gudgeon. Uncommon.
Leuciscus rutilus. Roach. Common in places.
Leuciscus cephalus. Chub. Uncommon.
Leuciscus vulgaris. Dace. Common in places.
Leuciscus phoxinus. Minnow. Very plentiful.
Tinca vulgaris. Tench. Uncommon.
Nemachilus barbatulus. Loach. Common.
Salmo fario. Trout. Common.
Anguilla vulgaris. Eel. Uncommon.

Some which are now uncommon were once common : e.g., the Eel was very plentiful in the Calder 40 years ago. A specimen was once taken in the dam-stones at Longbottom Bridge nearly three feet long.—Harold Pickles, 137, Hyde Park Road, Halifax, 31st May 1902.

NOTE on YORKSHIRE MOLLUSCA.

***Valvata cristata* in Upper Airedale, Yorkshire.**—Whilst working the Leeds and Liverpool Canal above the Five Rise Locks, Bingley, for aquatic molluscs, along with my friend Mr. Fred Booth, I was pleased to find *Valvata cristata* had made its appearance and was fairly common. This is a new record for Upper Airedale, also for the district under the supervision of the Bradford Naturalist Society, as a living mollusc; it has only been previously found in the lake marl in Crummockdale by Hugh Richardson in 1886 (see 'Journal of Conchology,' Vol. 5, p. 61). This shell has certainly been introduced since the publication of Messrs. Carter and Soppitt's 'Land and Freshwater Molluscs of Upper Airedale,' in 'The Naturalist' of March 1888, for this particular place is one that has been most visited by the various collectors mentioned in that list and would certainly have been found if it had been there.—Fred Rhodes, Art Museum, Bradford, 20th August 1902.

NOTES on LINCOLNSHIRE MOLLUSCA.

***Cyclostoma* at Oxcombe, Linc. N.**—Four dead specimens of *Cyclostoma elegans* were found by Mr. H. W. Burchnall and the writer on 4th August in Jericho Plantation, Oxcombe, and Farforth Valley, Div. 10 North.—C. S. Carter, 8, Bridge Street, Louth, 14th August 1902.

***Pisidium subtruncatum* near Louth, Linc. N.**—Among the mollusca taken from a large pond, in boulder clay, near Haugham, Div. 8 S., on 4th August, was a *Pisidium,* which I have since submitted to Mr. J. W. Taylor, who says it is rather uncertain, but that he was inclined to refer it to *Pisidium subtruncatum* of Malm, which is perhaps properly regarded as a form of *P. fontinale.* Other specimens obtained were:—One *P. milium,* one *Planorbis nautileus,* three *Pl. albus,* and several fine examples of *Limnæa stagnalis.*—C. S. Carter, 8, Bridge Street, Louth, 14th Aug. 1902.

***Agriolimax agrestis* Devouring Earthworms.**—On Saturday, 14th June, when journeying along Horncastle Road, Louth, my attention was attracted to an *Agriolimax agrestis* apparently devouring an earthworm, the worm being about three inches in length. As I had always thought this slug was exclusively herbivorous, I was in doubt whether it was really devouring the poor creature, but after watching it through my lens for a little time, I no longer had any doubt, for by this time it had eaten some portion of its victim's posterior end. The worm was in a semi-helpless condition, and made one or two attempts to get away.

On the next day and on the same road, but about a mile further, I found another devouring a portion of an earthworm. This worm had apparently been crushed to death by some pedestrian, as other portions were lying close by.

To-day, when looking at some molluscs I have in captivity, I found *Hyalinia cellaria* devouring *Helix rufescens,* and it had already disposed of a considerable portion of the *Helix.*—C. S. Carter, 8, Bridge Street, Louth, 16th June 1902.

NORTHERN NOTES and NEWS.

The pith of the Wild Birds Protection Act, 1902, which has just been passed by Parliament, is as follows:—'Where any person is convicted of an offence against the Wild Birds Protection Acts, 1880 to 1896, the Court may, in addition to any penalty that may therein be imposed, order any wild bird, or wild bird's egg, in respect of which the offence had been committed, to be forfeited and disposed of as the Court shall think fit.' To which we would add an expression of a hope that it will always be strictly enforced, and that any such specimens, if of value, shall be presented to such national or municipal museums as are willing to display it permanently. It would be a pity that useful specimens should be destroyed, while the enforcement against the offender would go far to prevent similar destruction.

YORKSHIRE NATURALISTS AT NORTH GRIMSTON.

THOMAS SHEPPARD, F.G.S.,
Curator of the Municipal Museum at Hull;
Secretary of the Hull Scientific and Field Naturalists' Club, and of the Geological Section of the Yorkshire Naturalists' Union.

The 14th June was surely a well-chosen date for an examination of the fauna and flora of the East Yorkshire wolds, but in common with the absolute disregard which the Clerk of the Weather appears to have had for seasonable warmth and cold during the last twelve months, middle June was more like mid-April, and cold winds and sharp showers prevailed. Immediately preceding the 14th there had been much rain, and even on the early morning of that date threatening clouds hung overhead, and probably had some influence on keeping some of the members away. Notwithstanding this, however, there was a very fair and representative attendance.

On the previous occasion of the Union visiting this neighbourhood the members had the advantage of the guidance of Mr. S. Chadwick, who worked so well amongst the rocks and quarries, and did so much towards forming a museum at Malton. Mr. Chadwick is now in the Antipodes, and we were debarred the pleasure of his presence this year. The Rev. E. M. Cole, M.A., F.G.S., of Wetwang, another geologist and antiquarian, who probably knows the wolds as well as anyone, was to have conducted the geological section, but unfortunately was prevented at the last moment from attending.

Mr. M. B. Slater, F.L.S., of Malton, a well-known figure at the Union's field meetings, was on his native soil, a fact which rendered his presence even more welcome than usual, were such possible, and he was able to show the visitors many interesting places.

The district around North Grimston is a particularly happy one for an excursion in which naturalists of so many different interests are taking part. On the hills around are numerous barrows and entrenchments and other evidences of the prehistoric inhabitants of the area, who two thousand years ago, and more, were 'naturalists' of necessity! Then the Romans knew the neighbourhood well, and had several 'streets' from various parts, all centring in an important Roman camp, now Malton. The chalk wolds, oolitic hills, dry valleys, and clayey flats not only afford a variety of material for the geologists to

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work at, but also provide the varying soils and diversity of natural features so welcome alike to the botanists, entomologists, and conchologists. The effect of the different subsoils upon the vegetation was most marked, and could readily be detected by those who had not the trained eye of the botanist.

Lord Middleton's well-kept park and gardens were also within the field of operations, and the botanists had the pleasure of seeing the beautiful fruit trees and flowers, and also passed through an enormous number of glass houses, where all manner of luxuriant exotic plants flourished. The pond near the Hall was stocked with beautifully-marked Loch Leven trout, some of which were examined, thanks to the efforts of an angler, who was ably assisted in the operation of 'landing' his catches by a large retriever dog.

The members conducted their investigations in three parties; the geological section, which commenced operations at Burdale Station, included Messrs. P. F. Kendall, F.G.S., J. W. Stather, F.G.S., E. Hawkesworth, and the senior Secretary of the section; the botanists, including Messrs. M. B. Slater, F.L.S., T. W. Woodhead, F.L.S., C. Waterfall, and J. F. Robinson started at North Grimston Station, as did also the conchologists and ornithologists, including Mr. W. Denison Roebuck, F.L.S., Rev. E. P. Blackburn, Mr. Kenneth MacLean, and Mr. A. White, F.Z.S. Mr. G. T. Porritt, F.L.S., represented the entomologists.

The different parties had a very profitable time, judging from the reports given at the meeting on the close of the day's excursion. For Vertebrate Zoology, Mr. Kenneth MacLean, Secretary of the section, has provided the following notes:—The district is truly an interesting one to naturalists of all branches, and particularly so to those belonging to the vertebrate section. Although no very great rarity was seen, several of the birds observed might be considered fairly scarce, and were certainly very interesting. For instance, the Green Woodpecker was there, and its sharp beak had left marks on many of the trees. Several of its nesting-holes were also seen. One of these holes had been taken possession of by Starlings, a not infrequent occurrence. The Woodpeckers are said to use the same nesting-holes year after year, but in nine cases out of ten Mr. MacLean has noticed the holes appropriated by Starlings after the first year's use. Starlings are known to be guilty of usurping not only the nesting-holes of Woodpeckers, but those of Swifts, Sparrows, Redstarts, etc.; in many cases actually turning out the rightful

occupants. The beautifully-constructed little nest of the Goldcrest was seen hung at the end of the Spruce branch, in which it had deposited eight tiny eggs. The Goldfinch was also seen during the day. The nests of the Wood Pigeon were very numerous, in some cases two or even three being in one tree. The pellets of the Tawny Owl were found and examined, but the bird itself was not seen. During the few hours at the disposal of the party 46 different kinds of birds were seen, about half of which were nesting; some of the old birds were sitting so closely that they almost allowed themselves to be handled. Many nests contained young birds, and several young were also seen on the wing. The following is a complete list of the birds seen :—

Rook. *Trypanocorax frugilegus.*
Carrion Crow. *Corone corone.*
Jackdaw. *Colœus monedula.*
Magpie. *Pica pica.*
Starling. *Sturnus vulgaris.*
Greenfinch. *Ligurinus chloris.*
Chaffinch. *Fringilla cœlebs.*
Goldfinch. *Carduelis carduelis.*
Brown Linnet. *Cannabina cannabina.*
House Sparrow. *Passer domesticus.*
Reed Bunting. *Emberiza schœniclus.*
Yellow Bunting. *Emberiza citrinella.*
Corn Bunting. *Miliaria miliaria.*
Sky Lark. *Alauda arvensis.*
Pied Wagtail. *Motacilla lugubris.*
Tree Pipit. *Anthus trivialis.*
Meadow Pipit. *Anthus pratensis.*
Great Tit. *Parus major.*
Blue Tit. *Parus cæruleus.*
Gold Crest. *Regulus regulus.*
Whitethroat. *Sylvia sylvia.*
Wood Warbler. *Phylloscopus sibilator.*
Willow Warbler. *Phylloscopus trochilus.*
Chiffchaff. *Phylloscopus minor.*
Sedge Warbler. *Acrocephalus phragmitis.*
Reed Warbler. *Acrocephalus streperus.*
Blackbird. *Merula merula.*
Song Thrush. *Turdus musicus.*
Mistle Thrush. *Turdus viscivorus.*
Redbreast. *Erithacus rubecula.*
Redstart. *Ruticilla phœnicurus.*
Whin Chat. *Pratincola rubetra.*
Hedge Sparrow. *Tharrhaleus modularis.*
Wren. *Anorthura troglodytes.*
House Martin. *Chelidon urbica.*
Sand Martin. *Clivicola riparia.*
Swallow. *Hirundo rustica.*
Green Woodpecker. *Gecinus viridis.*
Cuckoo. *Cuculus canorus.*
Swift. *Cypselus apus.*
Lapwing. *Vanellus vanellus.*
Water Hen. *Gallinula chloropus.*
Wood Pigeon. *Columba palumbus.*
Stockdove. *Columba œnas.*
Pheasant. *Phasianus colchicus.*
Partridge. *Perdix perdix.*

Only five mammals were seen, viz.:—Fox (*Vulpes vulgaris*), Rabbit (*Lepus cuniculus*), Hare (*Lepus europœus*), Mole (*Talpa europœa*), and the Water Vole (*Arvicola amphibia*). A Fox was observed stalking a fine cock Pheasant, and it occurred to us whilst watching him that were it not for the intercession and bribes of the hunting community the poor fellow would have a warmer time of it than even the Sparrow Hawk, Magpie, or Carrion Crow.

The Common Newt (*Triton tæniatus*), Toad (*Bufo vulgaris*), and Frog (*Rana temporaria*) were the amphibians noticed.

The meteorological conditions, viz., a 'damp heat,' were favourable for the conchologists, Mr. W. Denison Roebuck, F.L.S., Mr. J. Hawkins, and the Rev. E. P. Blackburn. To the latter gentleman we are indebted for the following interesting notes on the work accomplished :—Before the Malton train came into North Grimston the writer spent some time in a limestone quarry near the station, where Mr. Hawkins later in the day had some good finds. *Helicella cantiana* was very common there, including some very fine specimens. *Clausilia laminata* was fairly plentiful in a fine bed of broken sticks, and *Euconulus fulva* was also found. The conchologists accompanied the ornithologists, and were more or less in touch with them all the day. Leaving North Grimston Station they moved off in the direction of Ash Wood, skirting which were found some fine banded specimens of *Helicigona arbustorum,* some *Vitreæ* and *Arion ater, A. intermedius,* and *Agriolimax agrestis.* Crossing a field a wooded hill was ascended, where *Clausilia bidentata* and *C. laminata* were found in abundance, as well as *Limax maximus* var. *fasciata.* On some old sacking among the nettles *Cochlicopa lubrica* was very plentiful, as also was *Helix nemoralis.* Passing through Wharram Grange Farm the way dropped down the hill towards Birdsall, skirting Lund Wood. On the chalk hillside *Helicella virgata* was very plentiful, and dead examples of *H. itala* were found. At the bottom of the hill was a stream, full of 'peppermint' plants, which ran into a reedy pond. The stream yielded nothing, and the duckweed near the edge of the only part of the pond which could be approached was also unfruitful. Crossing the fields beneath Birdsall Brow a farmstead with a beautiful garden was passed, and the conchologists presently found themselves in Birdsall village, where Lord Middleton's greenhouses and gardens occupied a short time in seeing. Making their way past the handsome church they soon came to an old mill, now used as a timber yard. Here was a bubbling stream which also proved unfruitful, though carefully searched. Under the timber were some good finds, viz., *Pupa muscorum, P. cylindracea, Vitrea crystallina, Succinea putris* (a few very small specimens), *Carychium minimum, Arion hortensis, A. circumscriptus, A. intermedius,* etc. In the evening the stream near the school yielded fine *Limnæa peregra* in abundance, and one *L. truncatula* was found. On the station wall *Cæcilioides acicula* and *Vallonia pulchella* were noticed.

The following is the complete list of the day's finds :—

Arion ater. Plentiful.
Arion intermedius. Several.
Arion hortensis. Several.
Arion circumscriptus. Common.
Limax maximus var. fasciata. Plentiful.
Agriolimax agrestis. Plentiful.
Vitrina pellucida. A few, North Grimston.
Vitrea nitidula. Common.
Vitrea pura. A few.
Vitrea pura var. margaritacea. A few.
Vitrea crystallina. A few.
Vitrea cellaria. Plentiful.
Euconulus fulva. One.
Pyramidula rotundata. Common in North Grimston.
Helix aspersa. Common in North Grimston.
Hygromia hispida. Abundant in North Grimston and elsewhere.
Helicella cantiana. Abundant in North Grimston and elsewhere.
Vallonia pulchella. Several at North Grimston Station.
Helix nemoralis. A few. Wharram Grange.
Helix hortensis. A few.
Helicigona arbustorum. Common.
Helicella virgata. Abundant.
Helicella itala. Common, North Grimston.
Helicella caperata. Common. North Grimston.
Clausilia bidentata. Common. North Grimston, etc.
Clausilia laminata. Common. North Grimston.
Buliminus obscurus. A few. North Grimston.
Pupa muscorum. A few.
Pupa cylindracea. One specimen, the Mill.
Carychium minimum. Not uncommon.
Cochlicopa lubrica. Common.
Cœcilioides acicula. Not uncommon.
Succinea putris. Several very small specimens at the Mill.
Limnæa peregra. Abundant and fine. North Grimston.
Limnæa truncatula. One specimen, North Grimston.

Other species, such as *Helicigona lapicida, Punctum pygmæa,* and *Ancylus fluviatilis*, stated in the circular to occur in the neighbourhood, were not found during the day.

For the Entomological Section Mr. G. T. Porritt, F.L.S., writes that, consequent on the exceptional lateness of the season, insects in the adult stage were not plentiful, and the only lepidopteron worth mentioning was *Melanthia albicillata,* which appeared to be just getting well out. The Neuroptera and Trichoptera included *Sialis fuliginosa* (common), *Nemoura variegata* (abundant), *Chrysopa alba,* and *C. tenella*; *Silo pallipes* (common), *Limnophilus auricula,* etc.

Mr. Thos. W. Woodhead, F.L.S., its Secretary, reported on behalf of the Botanical Section that, owing to the very late season, many of the interesting plants of the district enumerated by Mr. Slater in the circular were not seen. Nevertheless the district was gay with flowers, if of the commoner kinds. Everywhere the Hawthorn hedges were white with blossom and formed a striking feature in the landscape for miles round.

The more interesting plants found in the hedge-rows and banks were *Berberis vulgaris, Daphne Laureola, Helianthemum vulgatum*, and *Galium verum*. Equally striking was the dominance of the Buttercup (*Ranunculus bulbosus*) in the pastures. Evidence of its abundance was shown by the boots of the members, which were yellow with its pollen. In one spot was seen a considerable quantity of *Colchicum autumnale*; other species frequently occurring were *Orchis mascula, O. morio, Listera ovata, Ophioglossum vulgatum,* and *Botrychium lunaria.*

A very interesting association was seen in Leys Wood, with its stiff clayey soil. Over a considerable area the trees were almost entirely Ash (*Fraxinus excelsior*), their earlier 'nurses' of Pine, Spruce, and Larch having long been cut down. The undergrowth was a pink carpet of *Lychnis diurna*, and showing conspicuously in it were, here and there, small clumps with white flowers. The less showy but common plants associated with the *Lychnis* were *Geum urbanum, G. rivale,* and their hybrid *G. rivale* × *urbanum* was plentiful, with many interesting states. Here, too, were *Hypericum hirsutum, Sanicula europæa, Conium maculatum, Circæa lutetiana, Galium aparine, Ajuga reptans, Lastræa Filix-mas,* and *Athyrium Filix-fœmina.*

A pleasant item in the day's programme was the visit to Birdsall Park, with its fine old trees—Yews, Limes, Oaks, and Sycamores—and the well-kept gardens near the hall. Under the guidance of the head gardener and the forester, ably assisted by Mr. Slater, so much of interest was shown to the members that all felt that time was too short to do it justice.

Mr. Wm. Ingham, B.A., has supplied the following report on the work of the bryologists. He points out that the mosses found during the day indicate a good moss district, and one worthy of a careful examination at different times of the year:—

'On the rocky station side at North Grimston grow *Tortula muralis*, the rare moss *Barbula convoluta* var. *Sardoa* B.&S., identical with the same species growing at Barkston and on the Great Orme's Head; and *Encalypta vulgaris* Hedw., still retaining its extinguisher-like calyptras.

On an Elder bush in Leys Wood, Mr. Slater found the pretty little *Orthotrichum pulchellum* Sm., and in the same wood grow the following mosses:—*Eurhynchium striatum* B.&S., *E. prælongum* B.&S., *Brachythecium purum* Dixon, *B. rutabulum* B.&S., in 'fruit'; *Hypnum cuspidatum* L., in 'fruit'; *Fissidens taxifolius* Hedw., on stiff clay banks; *Mnium punctatum* L., *Bryum capillare* L., and *Amblystegium serpens* B.&S., in 'fruit'

as usual. In the same wood grow the Hepatics, *Metzgeria furcata*, the male plant with good antheridia; *Pellia epiphylla*, and *Lophocolea heterophylla*, covered with 'fruit.'

Mr. Slater also records *Leucodon sciuroides* Schwgr., and the delicate and minute-leaved moss, *Eurhynchium pumillum* Schimp.

Outside the wood on a grassy slope grow *Eurhynchium crassinervium* B.&S., in two states, one being the large form with the nerve often forking, and the other a smaller form on a mound of bare soil; a wide-leaved and robust form of *Ceratodon purpureus* Brid., and *Grimmia apocarpa* Hedw.

Pit in Middle Chalk, Aldro.
From photograph taken by A. Stather, 14th June 1902.

On the base of a tree *Orthotrichum diaphanum* Schrad. in 'fruit' was growing sparingly.

In and by the side of a perennial spring grow *Amblystegium filicinum* DeNot.; a fine state of *Brachythecium rivulare* B.&S., of brilliant yellow colour; *Eurhynchium rusciforme* Milde, and a small, glossy distant-leaved form of *E. Swartzii* Hobk., with all the leaves squarrose, a moss which some authors would name *E. hians* or *E. distans*. On the stones by the side of the lake the writer was pleased to find the rather rare moss *Amblystegium irriguum* B.&S. in some quantity and apparently well established.'

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In the regrettable absence of the appointed leader, the Rev. E. M. Cole, M.A., F.G.S., the leadership of the geological section devolved upon Mr. J. W. Stather, F.G.S., president of the Hull Geological Society. In consequence of the somewhat limited train service, the members from Hull arrived upon the scene two hours before the remainder of the party, but this time was profitably spent by going to North Grimston and examining the very interesting exposures in the Coralline Oolite. In the section near the railway station, which is quarried for lime burning, a pronounced dip in the strata was observed, though apparently this was only a local feature. The quarrymen had saved one or two interesting fossils, including a very fine Shark's tooth. On the arrival of the train from the west the party, which was favoured with the presence of the President of the Union, Mr. P. F. Kendall, F.G.S., and several students from the Yorkshire College, proceeded to Burdale Station, and during the day saw some most beautiful examples of charming wold scenery. Following the valley towards Thixendale the members proceeded to Aldro, and from thence a bee-line was taken to Birdsall Brow and North Grimston. The sculpturing of the dales and their present configuration gave rise to much discussion during the ramble. It was pointed out how obvious it was that some of the dales had been formed 'at two goes.' The gradual slopes at the top are suddenly changed to steep slopes, and these latter form the sides of the lower part of the dales. Near the village of Thixendale, on the shoulder of a hill, was a very extensive deposit of 'grut,' or chalk rain-wash, which consisted entirely of angular fragments of chalk and flint, and was entirely devoid of foreign stones. The deposit is situated at a good height from the valley bottom and apparently must have originally been kept in position by some solid body, such as a glacier, occupying the floor of the dale. At Aldro the members halted at the tumulus which was thought by John Phillips to be a 'Rath' or 'meeting-place.' The barrow is remarkable on account of the very excellent earthwork thrown round it, which is still preserved, and the structure is situated at an angle in one of the entrenchments for which the wolds are so well known. Mr. Mortimer has proved by excavation that the mound is a grave. From this position a glorious view of the surrounding country could be obtained, and within easy access are nearly all the Jurassic rocks, though unfortunately good sections are very rare. As the Rev. E. M. Cole pointed out on the excursion circular, it seemed almost

incredible that a veritable epitome of all the secondary rocks should occur in so small an area; though the 'five-mile walk' referred to by Mr. Cole seemed indeed a long one! On the road to North Grimston are some interesting exposures in the Coralline series from which many well-preserved fossils were obtained. From here the party journeyed towards the National School at North Grimston, arriving there about 4.30, and strangely enough the other sections seemed to be assembling at the same place at the same time! It is perhaps unnecessary to state that the usual 'meat tea' was there and then provided, and in view of the long walk full justice was done to the meal.

After the tea a meeting was held, the President, Mr. P. F. Kendall, F.G.S., occupying the chair. Representatives of thirteen different Societies were present. Reports of the work done in the different sections were given by the respective Secretaries and others, particulars of which are given above. Votes of thanks were accorded to Lord Middleton for permission to visit his estates, to the local guides for their help, as well as to the Vicar for the use of the schoolroom. A similar compliment to the President for his services in the chair concluded the meeting.

NOTE on LINCOLNSHIRE COCCIDS.

***Lecanium capreæ* var. *genevense* at Lincoln.**—On the 19th June 1902 I took on the Fossdyke, north side, in Lincoln, Div. 6 W., on a twig of Hawthorn (*Cratægus oxyacantha*) a Coccid which Mr. R. Newstead has determined to be *Lecanium capreæ* var. *genevense* ♀.—J. EARDLEY MASON, 42, Carholme Road, Lincoln, 25th June 1902.

NOTES on COLEOPTERA.

Ravages of *Harpalus ruficornis* in Holderness.—At a recent meeting of the Hull Scientific and Field Naturalists' Club, Mr. J. Porter reported that at one or two localities in Holderness strawberries were being damaged by the ravages of *Harpalus ruficornis*. This beetle eats away the strawberries around the seeds, and disfigures them.—T. SHEPPARD, Hull, 31st July, 1902.

Three Cumberland Longhorns.—This year I have taken both *Asemum striatum* L. and *Pachyta octomaculata* F. in this neighbourhood for the first time. Neither species is, apparently, common. *A. striatum* was found sitting on a cut fir pole, which was lying on Orton Common, near Carlisle, on 15th June. On the same day, but on the other side of the woods, *Saperda populnea* L. was about in fair numbers. Had the afternoon been bright, instead of dull, *Saperda* would have been much more in evidence, as it flies freely when the sun is shining. I first found this beetle abundantly in this same place on 11th June 1899. In 1900 it was never seen, so that evidently it takes two years to complete its metamorphosis. A single specimen of *Pachyta octomaculata* Fab. was taken by me in Gelt Woods, near to where the Hell Beck joins the Gelt, on 27th July last. It was sitting on a head of Hemlock in the bright afternoon sunshine.—JAS. MURRAY, 11, Close Street, Carlisle, 11th November 1901.

NOTES on YORKSHIRE LEPIDOPTERA.

***Nemotois fasciellus* at Medge Hall: an Addition to the Yorkshire List of Lepidoptera.**—On Monday, 4th August 1902, I found *Nemotois fasciellus* F. (=*schiffermillerella* Schif.) at Medge Hall, near Thorne. Its distribution in England, according to Meyrick, is 'Kent, Suffolk, Cambridge, local.' This leaves a large hiatus from Cambridge to Yorkshire, where no doubt the insect occurs, but has not been recorded.—H. H. CORBETT, 9, Priory Place, Doncaster, 15th August 1902.

Vivat Melanargia galatea!—Having been informed by a friend of a choice locality where this insect—the Marbled White Butterfly—still occurs in our own county of York, I had the great pleasure of visiting this place a few days ago, when I saw about thirty on the wing.

I am not at liberty to divulge the exact locality, but for those desirous of information I may add that the place is within an easy ride from the ancient city of York.—REGINALD H. BARKER, Grosvenor Bank, Scarborough, 14th August 1902.

NOTE on FLOWERING PLANTS.

Marsh Helleborine in Mid-Cheshire.—During the last week of July I found the Marsh Helleborine (*Epipactis palustris*) flowering in profusion in one part of Knutsford Moor, the low-lying morass at the head of Tatton Mere, between the town of Knutsford and the railway. Associated with it were the Fragrant Orchis (*Gymnadenia conopsea*), the Twayblade (*Listera ovata*), the Spotted Orchis (*Orchis maculata*), and such marsh-loving plants as *Drosera rotundifolia, Pedicularis palustris, Menyanthes trifoliata,* and *Comarum palustre*—the 'Pit Strawberry' of the Cheshire country folk. The Marsh Helleborine was recorded from Knutsford Moor in the third edition of Withering's 'Botanical Arrangement of British Plants' (1796) on the authority of A. Aitkin, of Warrington, but it does not appear to have been noticed there by more recent Cheshire botanists, and Lord de Tabley ('Flora of Cheshire,' p. 303) doubted its occurrence. Mr. Charles Bailey has kindly confirmed my determination of the species.—CHAS. OLDHAM, Knutsford, 5th August 1902.

NORTHERN NOTES and NEWS.

The inhabitants of Withernsea and other Holderness villages are greatly concerned about their water supply. Water from borings in the Boulder Clay is not the most satisfactory, and a suggestion that a supply should be obtained from the Wolds is now being considered.

The Transactions of the East Riding Antiquarian Society, for 1901, just issued to the members, contains a paper 'On an Ancient Model of a Boat and Warrior Crew, from Roos Carrs, near Withernsea,' by Thomas Sheppard, F.G.S., who considers the curious relic to be of Scandinavian origin and pre-Viking age. The same volume also contains a paper by the Rev. C. V. Collier, F.S.A., on 'Further Notes from Old Burlington.' In the Churchwardens' accounts for 1669, quoted in this paper, an amount of 4d. is recorded as paid to 'Francis Harison' for a 'Fowmart head.'

At a recent meeting of the Geological Society of London, Mr. J. E. Marr, F.R.S., exhibited some specimens from a metamorphosed metalliferous vein several inches wide, which he had discovered in the basic andesites near the Shap Granite, in a quarry close to the highroad, north of the spot where it crosses Longfell Gill. The specimens are of interest as showing the existence of metalliferous veins in Ordovician rocks which have been formed in pre-Carboniferous times, for the Shap Granite which has produced the alteration is itself pre-Carboniferous.

HALF-A-DAY'S RAMBLE AT MABLETHORPE.

ARTHUR SMITH, F.L.S., F.E.S., ETC.,
Hon. Secretary and Curator, Grimsby and District Naturalists' Society.

MABLETHORPE is situated in Div. 9 of the Lincolnshire Division Map. It is generally known as a quiet, healthy spot for a sea-side holiday, and its surroundings are those which lend themselves to the pleasures of the many visitors who wish to avoid the more advanced, consequently the more busy, boisterous Cleethorpes. The sea bank is a series of sand-hills rising out of the sands to a great height; these hills are covered in places with Sea Buckthorn (*Hippophaë rhamnoides*) and other shrubs which tend to hold the blown sand and retain the sand dunes against all weathers. These hills shelter the town very much and add great comfort to visitors. I have been there when, although a bright, sunny, spring day, a bitter east wind has made things most unpleasant on the shore side of the hills, whilst the land side has been equal to a summer's day. The sands themselves are the finest I have seen, long stretches of beautiful hard sands on which to wander for a few miles is a pleasure to visitors, or a delight to the young folks who can build up all kinds of imaginary castles and fortifications without the fear of a collapse. Above the water-mark there is the usual powdery, soft, clean sand in which we love to recline during the hotter days. Below the water line are extensive mud flats so common along the Lincolnshire coast, and when the tide retreats some fine, clear mud pools are happy hunting grounds for the keepers of marine aquaria. Access to Mablethorpe is quite easy, excursions frequently running from all parts of the country and from Lincolnshire towns two or three times a week.

This paper is the result of a half-day's ramble, starting from Grimsby after dinner, arriving by train at Theddlethorpe, and then wandering about the sand-hills to Mablethorpe. The party consisted of the following:—G. Marris, A. E. Wilson, A. Smith, and A. Smith, junior, who are working up registers of the Fauna and Flora of the Grimsby district, and though the locality in question is out of that district it is easily worked from Grimsby, being readily reached by train.

About 60 species of plants were noticed in bloom, chief amongst them being:—

Echium vulgare.
Marrubium vulgare.
Orchis pyramidalis.

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The Hound's-tongue (*Cynoglossum officinale*) was noticeable everywhere along the sand-hills, and the Flowering Rush (*Butomus umbellatus*) looked handsome among the reeds in the ditches.

The larvæ of the Cinnabar Moth (*Euchelia jacobææ*) were as usual very common, and several of the commoner moths were on the wing.

The Marine Mollusca were represented by the following species noticed, mostly dead shells, in some cases only valves.

Cardium edule.
Ostrea edulis.
Pecten varius.
Mytilus edulis.
Mytilus modiolus.
Modiolaria marmorata.
Solen siliqua.
Pholas candida.
Pholas crispata.
Lacuna crassior.
Littorina rudis.
Littorina littorea.
Buccinum undatum.
Trophon truncatus.
Nassa reticulata.
Nassa incrassata.
Pleurotoma turricula.
Nucula nucleus.
Cyprina islandica.
Tellina fabula.
Tellina balthica.
Mactra stultorum.
Scrobicularia alba.
Mya arenaria.
Mya truncata.
Trochus cinerarius.
Hydrobia ulvæ.
Natica catena.
Purpura lapillus.
Murex erinaceus.
Fusus antiquus.

Ditch life was by no means plentiful and several dippings proved very unproductive. The only noticeable occurrences were :—

PHANEROGAMS.

Myriophyllum spicatum.
Lemna minor.
Lemna trisulca.

ALGÆ.

Diatoma vulgare.
Synedra.
Stauroneis phænicenteron.
Spirogyra.
Zygnema.
Coleochæte.
Nostoc cæruleum.
Oscillatoria tenuis.
Ulothrix zonata.
Cladophora fracta.

NOTES on YORKSHIRE MAMMALS.

Badger at Speeton.—A Badger (*Meles meles*) was shot at Speeton early in July.—T. SHEPPARD, Hull, 31st July 1902.

Otter near Hull.—In June last an Otter (*Lutra lutra*) was seen near the Hull Bank Hall, near Hull.—T. SHEPPARD, Hull, 31st July, 1902.

Reindeer Antler in the Peat, Withernsea.—Mr. George Miles has presented to the Hull Museum an antler of the Reindeer (*Cervus tarandus*), which was found in the peat exposed on the shore at Withernsea. Remains of the reindeer are recorded from the Glacial Gravels of Holderness, but this is the first record from the peat that I am aware of.—T. SHEPPARD, F.G.S., Hull Museum, 22nd July 1902.

8 SEP. 1902

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Yorkshire Plants in the Bicheno Herbarium at Swansea.—Rev. H. J. RIDDELSDELL, M.A.

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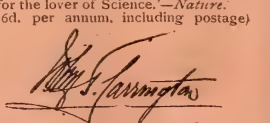

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Rd. W. Goulding.—Christian Frederick Esperger, 8vo. reprint, 1902. [Author.
Chas. Hedley.—Mollusca of Trawling Expedition, H.M.S. Thetis, 1902. [Author.

LAKELAND BIRDS, Studies of. By **Mary L. Armitt.** SECOND SERIES now ready, post free **1s. 2d.**; both series **2s. 3d.**, from GEORGE MIDDLETON, Ambleside.

Birds of the Isle of Man.—Being engaged in the collection of material for a work on Manx Birds, I would gratefully receive and acknowledge information bearing on the subject, or references to books, periodicals, etc., in which such occur, and which may not have come under my notice.—P. RALFE, The Parade, Castletown, Isle of Man.

THE BROCKRAMS OF THE VALE OF EDEN
AND THE EVIDENCE THEY AFFORD OF AN INTER-PERMIAN MOVEMENT OF THE PENNINE FAULTS.

PERCY F. KENDALL, F.G.S.,
Leeds; *President of the Yorkshire Naturalists' Union.*

The writer has been engaged, during occasional visits to the Vale of Eden, in the study of the well-known Brockram Conglomerates which form so conspicuous an element in the Poikilitic Series of the district. Tentative results obtained five or six years ago have been fully confirmed by later observations. It is perhaps as well, therefore, to put upon record a preliminary statement of views which have already obtained some currency by annual demonstrations in the field to scientific societies of the North of England.

The stratigraphical relations of the Brockrams can be well studied in the almost continuous sections which are exposed between Hoff Beck, two miles west of Appleby, and Brackenber Common, three miles east of the town. The beds dip to north-east at about 20°, and the succession exposed is as follows :—

St. Bees Sandstone (Trias).

Permian.
- Shales and Sandstones.
- Magnesian Limestone.
- Upper Brockram, interbedded with and overlain by Penrith Sandstone.
- Penrith Sandstone.
- Lower Brockram.

Carboniferous Rocks.

The Lower Brockram forms a mural escarpment near Hoff Beck, and the nature of its constituents can conveniently be studied in great clean faces of quarries, as well as in the natural exposures. In the course of several careful examinations of the pebbles it was found that they all, except some twenty or thirty at most, consisted of Carboniferous Limestone or Chert, the former well-rounded and frequently very fossiliferous. *Saccamina carteri* was found in one. The stones ranged in size up to nearly a foot in diameter.

The few exceptions mentioned above were Hæmatite, Sandstone, and ten or twelve small pebbles of Vein-quartz, such as might be found in the Millstone Grit, the Carboniferous Base-

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ment conglomerate, or, more remotely, as veins in the Skiddaw Slates. Recurrences of the same bed, presenting the same characters as regards the nature and source of the pebbles, are seen on the west bank of the Eden below Appleby, on Gallows Hill, and at Hungriggs Quarry, east of Appleby. At the last two localities the pebbles have been very extensively dolomitised evidently subsequently to deposition, for the pebbles have in many cases been reduced to a mere shell, usually lined with crystals of dolomite.

The same aspect of the Lower Brockram is presented in the exposures at Stenkreth (Kirkby Stephen) and in several quarries to the northward of Hungriggs. It can be seen from these facts that for a distance of ten or twelve miles along the strike, and for over two miles on the dip, the character of the pebbles in the Lower Brockram undergoes no change.

The Penrith Sandstone about Appleby attains to a thickness of probably a thousand feet, but no exact estimate is possible owing to the occurrence of a large number of faults of unknown throw. Near its upper boundary numerous incalations of the Upper Brockram conglomerate occur, especially in the section in Hilton Beck.

The Upper Brockram in this section consists of a rather friable conglomerate in beds of a foot or two in thickness, parted by beds of sandstone from a few inches up to thirty or forty feet thick. The constituent pebbles are partly of Carboniferous Limestone, very soft and much dolomitised, but other elements frequently preponderate. These are well-rounded pebbles of Vein-quartz, angular pebbles and blocks of quartzite, fragments of conglomerate containing Vein-quartz in a quartzite matrix, and finally pebbles of Rhyolite. At other exposures to the northward, as at Crackenthorpe, the same characters recur.

The source of the different pebbles may now be considered. The limestones are, of course, from the lower part of the Carboniferous series—they present no peculiar features; the pebbles of Vein-quartz are clearly derived from the numerous quartz veins in the Skiddaw Slate of the Cross Fell Inlier, but their thoroughly rounded condition shows that they must have come at an intermediate stage through some pre-Permian Conglomerate. This conclusion is confirmed by the occurrence of fragments of a conglomerate containing such pebbles, which is recognisable as the very characteristic Basement Carboniferous conglomerate of the Cross Fell Range. The angular blocks of

quartzite can be matched precisely by the rocks which succeed the Basement conglomerate on Roman Fell. At one time the writer regarded the Rhyolites as indisputable evidence of the exposure of the Borrowdale rocks of the Cross Fell Inlier to denudation during Permian times, but, while this still seems to be the most probable explanation of their presence in the Upper Brockram, it is possible that they could have been derived from the Carboniferous Basement conglomerate in which, at Swindale Beck, a few such pebbles occur.

Setting aside the Rhyolite pebbles, there is still a body of evidence which seems to warrant deductions of very great interest. The facts to be explained are—the occurrence in the Lower Brockram of a practically pure gathering of Carboniferous Limestone, while the Upper Brockram contains a very high percentage of rocks from the very base of the Carboniferous Series. They might be explained on the supposition of derivation from opposite sides of the Vale of Eden, the Lower Brockram being supposed to come from the Carboniferous Limestone outcrop towards Orton, while the Upper Brockram was derived from the Pennine Range. This view has little to commend it. If the Carboniferous Basement conglomerate was exposed to denudation during the deposition of the Upper Brockram, then the Carboniferous Limestone must have formed a bold and lofty escarpment at the same time, and, that being granted, it is highly improbable that it failed to yield the materials of the Lower Brockram, which at Hungriggs is less than three miles from the Outer Pennine Fault, which exposed a scarp of Carboniferous Rocks in Permian times. Upon the alternative, and, as it seems, preferable hypothesis, that the materials of the two Brockrams were all derived from the Pennine Chain, an inter-Permian movement of the faults which threw up the Cross Fell Range and the well-known Inlier seems necessary.

Professor Lapworth has pointed out that when an anticlinal fold is exposed to denudation the derivative beds will consist of the same material as those of the anticline, but in reverse order. The uppermost beds of the anticline will yield the pebbles in the lowest of the derivative beds, while the core of the anticline will be represented only in the highest of the derivative beds. This principle may be illustrated by the Tertiary Beds of the south-east of England: the Lower Eocene Conglomerates contain only flint pebbles from the Chalk, while the high-level gravels which rest on the Bagshot series contain, besides flints, many pebbles derived from the Lower Greensand.

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Where, however, the exposure is by a fault scarp the whole of the beds exposed in the scarp will contribute to the first-formed derivative Conglomerates. The absence of detritus of the Basement Carboniferous from the Lower Brockram shows that the Basement Beds were not exposed in early Permian times, but that a movement of the fault exceeding the thickness of the Penrith Sandstone brought the lowest members of the Carboniferous Series above the surface at the time of the deposition of the Upper Brockram.

NOTES on YORKSHIRE BIRDS.

Little Stint near the Spurn, Yorkshire.—A Little Stint (*Limonites minuta*) was seen here on the 2nd inst.—PHILIP W. LOTEN, Easington, 13th September 1902.

White-headed Variety of Guillemot at Speeton.—A white-headed variety of the Guillemot (*Lomvia troile*) was seen at Speeton in July.—T. SHEPPARD, Hull, 31st July 1902.

Curious Nesting-place of a Wren at Winestead, Holderness.—A Wren (*Anorthura troglodytes*) has recently nested and brought off its brood in the decayed carcass of a Carrion Crow, which was hung, together with Stoats, Weasels, and other 'vermin,' comprising a gamekeeper's hoard at Winestead, in Holderness. After the Crow had been hung up some time nothing remained but the feathers and bone, inside which a Wren built its nest.—T. SHEPPARD, Municipal Museum, Hull, 5th July 1902.

Albino Swallow and Swift near Bradford, Yorkshire.—During the first two weeks in August an albino Swallow (*Hirundo rustica*) has frequented a place near Bradford, and, from the general appearance and flight, evidently was a young bird.

It would be interesting to ascertain the cause of this albinism. There is no doubt the present season has been a fatal time for small birds. During the time the Swallows made their appearance frosty mornings were of frequent occurrence, this state having been repeated more or less throughout, and it is quite possible that the absence of pigmented corpuscles may be due to malnutrition caused by the disorganisation of the digestive apparatus, in this or its parents, consequent on the disturbance in the food supply from the cause alluded to.

In my opinion the albinism was not analogous to an albino Blackbird or the white in a pied Blackbird, because apparently in normal seasons Blackbirds of the pied variety—or at any rate birds with a sprinkling of white feathers—are by no means rare, and may, for anything we know, be the initial steps for ultimately establishing a new species, similar to what we see in the Ring Ouzel. I should be pleased to learn if any readers of 'The Naturalist' have observed any albino Swallows elsewhere, and, if so, to record them, in order to see if there is any relationship between the present abnormal season and the appearance of albinos.

In addition to the above I have heard of an albino Swift (*Cypselus apus*) having been seen in the neighbourhood, but I have had no satisfactory confirmation.—ROSSE BUTTERFIELD, Wilsden, Bradford, 23rd August 1902.

NORTHERN NOTES and NEWS.

On the 4th of August, 1902, the memorial to the late Canon H. E. Maddock, M.A., F.G.S., was dedicated at Patrington. It consisted of a new groining in the north aisle of the nave. Canon Maddock was known to the readers of this journal, and was deeply interested in the geology and botany of East Yorkshire.

THE HAZEL (*CORYLUS AVELLANA*).

P. Q. KEEGAN, LL.D.,
Patterdale, Westmorland.

It may be owned and said that the Hazel bush or a small shrubbery of Hazel bushes is specially attractive to the juvenile spirit. The quite peculiar and eminently remarkable tufted and, so to speak, 'concentrated' manner in which it throws out its branches and shoots coupled with the lavish vestiture of its foliage, not to mention the edible quality of the fructification, contribute a spectacle which no young eye may overlook. Natural steeps, or damp hollows seamed by a bubbling beck, somehow acquire aspects of picturesqueness and witchery from a copse-wood of Hazels. I propose, therefore, as a memorial of old days, to present a brief structural and physiological account of this interesting shrub, passing in successive review the axial organs (stem, root, etc.), the foliar organs (leaves), and the reproductive organs (flower, fruit).

Stem and Root.—The wood is only of medium hardness and weight (specific gravity 0·62 to 0·73), compact, homogeneous, with regularly circular growth, uniformly white, and with no distinction between alburnum and duramen save where, in oldish specimens, a physiological alteration or tannic degeneration attacks the central part, which then turns brownish-red. The medullary rays (macro) are seemingly of unequal size —some very thin, the others very thick and sparser, but (micro) really formed of very thin rays alternating with narrow plates (sometimes only one plate) of fibrous tissues free from vessels (false rays); the vessels are apparently equal and hardly larger or more numerous in the inner (spring) wood than in the outer (autumn) wood of the annual ring, are either isolated or in radial files of 2 to 12, and have simple pits and no scalariform thickening; the fibres are the predominant element of the wood and have very thick walls, and are associated with parenchyma describing very fine and indistinct concentric zones; the annual rings are sharply defined by the interposition between them of a thin layer of closely appressed fibres. In the bark there is next the wood a close-set medley of thin-walled parenchyma and sieve-tubes, traversed by very fine, nearly straight medullary rays; outwards some large stone-cells (scleroblasts) occur with large crystals, and a single bundle of stoutish fibres surrounds the whole vascular bundle in a ring; a collenchyma and a phelloderm are found within the periderm, which latter, in the young

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twigs, consists at first of wide, yellowish, thin-walled cells, but later on a series of brown flat-celled layers alternate with these, and the former, being soft, burst, peel off in shreds, and remain as a sort of débris on the exterior of the older shoots; so that the bark of the branches eventually becomes of a brown-red shade streaked with abundant lenticels, finally becoming smooth and silvery grey, but it is only at the base of the trunk of a very old tree that a secondary periderm (rhytidome) is ever developed furrowed and scaly. The wood contains much starch all the year round, also free phloroglucin, coniferin, and a little tannin; the vessels are rich in glucose in summer and winter; in October and throughout the winter the central pith is quite devoid of starch, and by mid November the starch also vanishes from the bark until the ensuing March, when it reappears preparatory to the unfolding of the leaf-buds. The bark contains about 1 per cent. wax, fat, etc., a trace of carotin, 5 resin, nearly 3 tannin, also free phloroglucin, glucose, and mucilage, and 6·6 ash in dry, which in May contains 12·5 per cent. alkaline salts, 5 silica, 40 lime, 4·5 magnesia, and 2·7 P^2O^5. The wood yields 0·5 per cent. of ash which in May contains 24·5 per cent. soluble alkalies, 14 potass, 4·6 silica, 25 lime, 8·5 magnesia, and 10·4 P^2O^5. There is much iron in the bark, and much manganese in the wood; in fact, the whole tree absorbs a large amount of the heavier minerals of the soil. No powerful vigour or redundancy of growth is allotted to the Hazel. Its principal stem consummates, so to speak, when it has attained a certain height, and becomes replaced by straight, slender, very elongated shoots, which evolve from the stock or from the roots (suckers). At first the rooting apparatus is represented by a straight pivot root clothed abundantly with hairs; in about three years' time this ceases to lengthen, and lateral roots are now developed therefrom, one of which later on takes the lead, and is prolonged far below the soil, while still retaining throughout nearly its whole length an equal diameter. It is this remarkable capacity of shooting by suckers that occasions the characteristic 'concentrated' growth. According to Leipzig, the dry root yields 3·27 per cent. of ash which contains only 8·6 per cent. soluble salts.

Leaves.—The mesophyll is composed of two layers of palisade cells occupying about half its thickness, and a very open lacunar tissue with large granules of chlorophyll (heliophily); the upper epidermis is clothed with long soft hairs, there is no hypoderm beneath it, and the lower epidermis is hairy also in

youth, and has when mature about 150 stomata per square millimetre; the vascular bundle system of the lamina is closed (not open as in Birch). This structure indicates a considerable protective safeguarding against excessive transpiration, rather than great assimilatory energy; and the leaf being rather thick it absorbs much heat. The young leaf contains a considerable amount of carotin, with moderate amounts of wax, fat, and resin, which remain throughout most of the life of the organ. Rutin is present with a benzene group not detectable in allied genera, and the tannin amounts to about 5 per cent. in autumn. Free phloroglucin occurs in nearly all the epidermal cells and in the mesophyll. A special feature is the presence of inosite. At the end of July—the period of mature development of the leaf—it contains in dry about 14·5 per cent. albumenoids, 65·8 non-nitrogenous matter, 14·5 fibre, and 6·3 ash. The ash presents some remarkable features. The proportion of soluble salts therein is comparatively small (about 30 per cent. at most). At the end of July there is 18 per cent. soluble salts, 4·2 silica, 30·4 lime, 7 magnesia, 4·5 SO^3 and 7·7 P^2O^5; iron and manganese are present in some cases in considerable quantity; in the autumn the silica rises to about 15 per cent., and the phosphorus sinks to 3·9 P^2O^5. This composition clearly indicates a sparse production of carbohydrates, and forsooth this is a palpable feature in the analysis of the leaves, and is doubtless incidentally connected with the powerful evolution of fatty matters in the seed.

Flower and Fruit.—The Hazel is the most precocious of all our flowers of the forest. The bracteal scale of the male catkin is clothed with hairs, and its epidermal cells have infolded walls. The ovary encloses two loculi with one ovule in each, and is surmounted by two long styles of a purple-red colour. The nut is a one-seeded achene resulting by abortion from the bilocular ovary. Its pericarp is composed of an epidermis studded with fine hairs, below which a layer of roundish cells occurs with moderately thin walls arranged tangentially; these cells gradually give way to large oblong radially disposed cells with very stout walls pierced by numerous very fine pore canals, while towards the interior the thickening of the wall is so augmented that finally nothing is left but an almost solid mass with merely a very small cavity within. The hard, dry, tooth-cracking nut is, therefore, constructed of a highly lignified cellulosic skeleton or framework, not strengthened by any serious intermixture of mineral matters, but solely the result

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of a highly advanced stage of deassimilation. In its growing period the pericarp encloses a very large quantity of tannin, which aids or is used up in the process of lignification (the lignin constitutes 14 or 15·7 per cent. of the sclerous tissue). The kernel (seed) possesses an oily endosperm only slightly developed, but has thick tuberous cotyledons containing aleurone and oil, but no starch whatever at any period of their growth or existence. At the time of pollination there is not the faintest sign of a placenta or of ovules, hence the pollen must possess an enormous stimulus-energy and demand abundant pabulum for the performance of its function. The pollen contains 9 per cent. of water, and dried has 4·8 nitrogen, 31·6 albumenoids, 64·3 non-nitrogenous matter (4 fat acids, 7 to 8 cane-sugar, 0·1 vernine, 5 starch, 3 cuticle, etc.), and 4 ash. The male catkin in January yields 2·17 per cent. of ash in fresh which has 4·58 per cent. phosphorus (in March, 4 phosphorus and 2·4 sulphur). The kernel contains about 48 per cent. of water and 62·6 oil, and the dry substance has 16 per cent. albumenoids, 67 oil (55 by pressure), 21 carbohydrates, 4·8 fibre, and 2·8 ash. The oil is slow-drying, inodorous, of a mild taste, specific gravity 0·916, of 1·468 refractive index, congeals at – 19° C, consists chiefly of olein with a very small quantity of palmitin, and gives with nitric acid a greenish, with sulphuric acid a bluish-green and gray colour. The principal albumenoid of the seed is a heavy snow-white powder insoluble in water, but is easily dissolved by salt solution, and yields with HCl a splendid violet-blue colour. Aleurone grains, globoids, and crystals are observed in the cells along with the droplets of fat-oil, which first appear visible only at the time when the reserve albumenoids are deposited in notable quantity by the action of the protoplasm which for this purpose utilises the sugars of the seed as a powerful respiratory stimulus and material. The distinctive feature is that the aleurone and oil are organised without any production of starch. Once upon a time about Holy Rood Day (14th September) I undertook the troublesome task of incinerating the fresh nuts divested of their leafy wrappers. The ash amounted to 0·53 per cent., and contained 36·5 per cent. soluble salts, 25·7 potass and soda, 1·6 silica, 15·2 lime, 8·6 magnesia, 6·2 phosphorus, and 2·2 sulphur.

Summary.—It may be gathered from the foregoing recount that the Hazel presents many features of interest. It is heliophilous, i.e., it depends on light for the full development of its foliage, which at best is never redundant—the light within its

deepest covert being about one-third the intensity of that in the open (that of its ally the Hornbeam being only one fifty-eighth). The peculiar structure of its wood and leaves, the feebleness of their conducting and transpiring elements, the extraordinary inflorescence and the functions of the pollen grains, the powerful amassment of oil in the seed and the thoroughgoing lignification of the pericarp, the wide extension and food-searching efficacy of the root system—all these are worthy of special study and consideration. The crowning feature, with which all the rest are connected, is the plethora of oil in the seed produced and evolved by the protoplasm without the aid of starch—a circumstance which allies it physiologically with the Hornbeam and Walnut, and separates it unequivocally from the Beech, Oak, and Spanish Chestnut.

NORTHERN NOTES and NEWS.

Although the meeting of the British Association this year was held in Belfast, many matters relating to the northern counties were brought before the members, principally, however, in Section C (Geology). It was particularly gratifying to find how deeply indebted several committees of research were to the Yorkshire Naturalists' Union and to Yorkshire workers. The Erratic Blocks' Committee's Report, for example, consisted entirely of records supplied by the Yorkshire Boulder Committee and the Belfast Society. Professor Watts referred to the great assistance given to the Geological Photographs' Committee by Yorkshire geologists. The Report of the Committee on the Movements of Underground Waters of North-West Yorkshire dealt, naturally, with work in our largest County, whilst the ground covered by the Committee for studying Life-Zones in the British Carboniferous Rocks is largely situated in northern England.

Two new Committees were formed at the Belfast meeting for conducting geological work. The first, with Professor Herdman as Chairman and Mr. J. Lomas as Secretary, is to study the Fauna and Flora of British Trias. The second is to make a thorough examination, by borings, etc., of the deposits at Kirmington, Lincolnshire, which may be of pre-Glacial age. This Committee consists of Mr. G. W. Lamplugh (Chairman), Messrs. C. Reid, F. W. Harmer, Thomas Sheppard, and J. W. Stather (Secretary).

In addition to the reports of committees already referred to, the following papers, bearing on the geology of the northern counties, were read in Section C:—'On the Brockrams of the Vale of Eden, and the Evidence they afford of an inter-Permian Movement of the Pennine Faults,' by P. F. Kendall; "The Fossil Flora of the Cumberland Coal Field,' by E. A. Newell Arber. The first of these appears in this number of 'The Naturalist.'

A paper on the occurrence of Foraminifera in the Boulder-clay gave rise to a discussion which will long be remembered by those who were present. A well-known professor of geology was bold enough to speak at some length in favour of the marine origin of the Boulder-clay. This gave the glacialists an opportunity of stating their case. When, however, an arch-priest amongst the glacialists commenced his criticisms, the professor retired, in consequence of an important engagement, and no doubt much 'sport' was missed in consequence.

NOTE on YORKSHIRE HYMENOPTERA.

***Sirex gigas* at Wetwang-on-the-Wolds, Yorkshire.**—A Giant Tailed Wasp (*Sirex gigas*), female, was caught to-day on my stick heap—only the third in my residence here of 37 years.—E. MAULE COLE, Wetwang Vicarage, 25th August 1902.

NORTHERN NOTES and NEWS.

Resuming our notes on the Belfast meeting of the British Association, another item of interest to north country geologists was mentioned in connection with a discussion on a paper dealing with the Permian Rocks of the Vale of Eden. It will be remembered that some time ago Mr. J. G. Goodchild described a striated boulder found by Mr. Atkinson in the Brockram. This was deposited in the Penrith Museum. The importance of this boulder was such that Mr. P. F. Kendall paid a special visit to the museum, and, together with the Curator, searched high and low for the specimen, but it was not to be found. This, as Mr. Kendall pointed out, was particularly unfortunate, as with the boulder was lost *all* the evidence of a Permian glaciation in England!

In Section K (Botany) several papers dealing with the plants of the Coal-Measures were read. These were by Messrs. A. C. Seward, E. N. Arber, James Lomax, D. H. Scott, and Miss M. Benson.

In Section B (Chemistry) Mr. W. Ackroyd (Halifax) gave a paper on 'The Telluric Distribution of the Elements in relation to their Atomic Weight,' in which it was shown that, as a rule, the rarity of an element increases with atomic weight.

At the Meetings of Delegates from Corresponding Societies various suggestions were brought forward by the representatives of different sections, as to the manner in which the value of the work done by the field clubs might be increased. Some of the suggestions were useful, and might be adopted with advantage. Professor W. W. Watts, the Chairman of the Conference, hit upon the happy idea of inviting the delegates to an 'at home,' when probably much more was accomplished in an informal manner than was done at the official meetings.

Grants amounting to £960 were made for scientific purposes, the following being of interest to our readers:—Fauna and Flora of British Trias, £5; Erratic Blocks, £10; Underground Waters of North-West Yorkshire, £40; Life-Zones in British Carboniferous Rocks, £5; and Geological Photographs, £10.

Students of Palæo-Botany will be pleased to learn that the eminent and long-continued services rendered to that branch of science by Mr. Robert Kidston, F.R.S.E., of Stirling, have been recognised by his election this year to the Fellowship of the Royal Society.

The date of the Annual Meeting of the Yorkshire Naturalists' Union at Hull, which had been intended for October, has now been fixed for Wednesday, 3rd December. The President, Mr. P. F. Kendall, F.G.S., will deliver an address on 'Problems in the Distribution of Animals and Plants.' Every effort is being made by the local societies to ensure the success of the meeting. Special exhibits will be arranged for the benefit of the members, and it is hoped that there will be a good attendance.

LATHYRUS OCHRUS: A NEW YORKSHIRE COLONIST.

F. ARNOLD LEES, M.R.C.S., L.R.C.P.Lond.,
Leeds; *Author of 'The Flora of West Yorkshire.'*

On originally-intended Coronation Day (26th June) fell to my friend Mr. Joseph F. Pickard the honour of finding and enabling me to name with certainty a new West Riding Colonist. I put it in this way because the plant in question had been observed in the spot where Mr. Pickard gathered it, in a young state as early as 1883, and reported to me as *Lathyrus Aphaca.* In absence of actual specimens this name was accepted by me, the calcareous subsoil being such as the 'Yellow Vetchling' exclusively affects as an indigen, but in consonance with a practice of (perhaps) over-caution, in 1887 I omitted to record it for the Wharfe river basin in my 'Flora of West Yorkshire.'

This 'new' Vetchling is *Lathyrus Ochrus* DC.—the *Ochrus pallida* of Persoon. It is an abundant Colonist in a large field of grain, sloping down to the north-west from Smaws Wood, 1½ miles west of Tadcaster, south of the river and railway line. The Vetch has appeared hereabouts for fully thirty years, but not always in its entirety flowering and fruiting, by reason of the cutting of the crop.

When young the plant has a very similar facies to *L. Aphaca,* the leaf-like decurrent stipules (expansions from the stem) being either bi- or tri-fid, ending in capillaries, the central produced from the mid-rib. When older the petioles (still conspicuously decurrent) have one pair of pinnæ, with a third ovate leaf-like prolongation with one or more tendrils at its apex, by which the plant holds on to adjacent vegetation. Full grown, the Vetch attains a height of nearly two feet. The flowers are axillary, solitary, on a brief pedicel, and of fair size, in colour a cream-yellow, papilionaceous and quite half an inch in length. From this soon proceeds a garden-pea-like pod, which, however, is so markedly different from the other species of *Lathyrus* that Bauhin first described it as *Ochrus*—a genus to itself. This pod is made flat on the upper side (dorsum) by rectangular wing-expansion from the seed-bearing suture. Length of ripe pod, fully two inches, carrying three or four peas.

From its long establishment here this Vetchling seems to merit more notice than is accorded to a casual alien. This

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annual is a native of the fields and hedges in the South of Europe, from Albania through Italy to Spain and central France. Of course, it must have been in the first instance introduced to the Tadcaster district, but this may quite conceivably date back to the Roman occupation. The reasons in support of this, as well as the occurrence in the district of *Urtica pilulifera,* cannot be enlarged upon here; but even as an 'alien' it is, I believe, new to England.

NOTES on FLOWERING PLANTS.

Plants noted at Y.N.U. Excursion to Coxwold: a Correction.—In 'The Naturalist,' Sept. 1902, p. 278, line 4, for *Rubus alpinus* read *Ribes alpinum,* and line 7 from bottom for *Primula elatior* (Oxlip) read *Primula vulgaris* × *veris.*—T. W. WOODHEAD, Huddersfield, 11th September 1902.

Silverdale Plants.—I was pleased to see in 'The Naturalist' for February a list of the plants of Silverdale, and as I spent a holiday there this summer I carefully took notes of what I saw. I found some plants not mentioned in the list. They may not all be strictly within the area, the boundaries of which I was not perfectly acquainted with, but they are all within what we might term almost speaking distance.

Medicago sativa I found in 1900, and this year in a corn field near Cove House.

Tilia parvifolia. Two fine trees at Wood Well.

Hippuris vulgaris. Waterslack.

Parnassia palustris, recorded in the List as rather doubtful, I found above the large Tarn in plenty.

Valeriana officinalis. Waterslack.

Vinca major. On the rocks at Jenny Brown's Point. An inhabitant told me it had been there to his knowledge for forty years, but no doubt an escape at some time.

Stachys palustris. Waterslack.

Teucrium chamædrys. In a field on the green.

Samolus valerandi. Near Jenny Brown's Point.

Lonicera xylosteum is, I regret to see, cut down in the Eaves, also that *Serratula tinctoria* is gone from the back of the church.

But my main object in writing is to correct an error respecting the shrub *Cotoneaster vulgaris* (*integerrimus*) of the list, which is really *C. microphylla.* I got specimens from the places named, both alike. I am confirmed in what I say by my friend Mr. J. F. Pickard, who has visited Silverdale since I was there, and I send this note, as it would be a pity for any ardent botanist to visit the place in search of *C. vulgaris* and not find it there.—WM. KIRKBY, 5, Tanfield Place, Virginia Road, Leeds, 18th Sept. 1902.

NOTE on LINCOLNSHIRE FUNGI.

***Geaster fornicatus*: a Correction.**—In my note, 'Naturalist,' September, p. 288, line 4, for 'sporidium' read 'exoperidium.'—W. FOWLER, Liversedge, 3rd September 1902.

NORTHERN NOTES and NEWS.

The fine series of eggs of the Great Auk collected by the late Mr. Champley, of Scarborough, which was exhibited to the members of the Yorkshire Naturalists' Union on their visit to Scarborough a few years ago, has been acquired by Mr. Rowland Ward, of Piccadilly.

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Papers and Records published with respect to the Natural History and Physical Features of the North of England.

GEOLOGY AND PALÆONTOLOGY, 1899.

THE present instalment has been compiled and edited by

THOMAS SHEPPARD, F.G.S.

Previous instalments of the Bibliography of Geology and Palæontology have appeared as follows:—

For 1884,	in 'Naturalist,'	Dec. 1885, pp. 394-406.
,, 1885,	,,	Nov. 1886, pp. 349-362.
,, 1886,	,,	June 1888, pp. 178-188.
,, 1887,	,,	Feb. 1889, pp. 61-77.
,, 1888,	,,	April-May 1890, pp. 121-138.
,, 1889,	,,	Nov. 1890, pp. 339-350.
,, 1890,	,,	Oct.-Nov. 1891, pp. 313-330.
,, 1891,	,,	July-Aug. 1892, pp. 219-234.
,, 1892,	,,	Sept. 1893, pp. 265-279.
,, 1893,	,,	Sept.-Oct. 1898, pp. 273-296.
,, 1894,	,,	March-April 1899, pp. 81-103.
,, 1895,	,,	Oct.-Nov. 1899, pp. 305-324.
,, 1896,	,,	June 1900, pp. 173-191.
,, 1897,	,,	Jan.-Feb. 1901, pp. 17-36.
,, 1898,	,,	Oct.-Nov. 1901, pp. 305-324.

I have to thank Mr. W. Denison Roebuck, F.L.S., and Mr. Alfred Harker, M.A., F.R.S., F.G.S., for assistance.

Particulars of papers, etc., omitted from the following list will be gladly received and included at the commencement of the 1900 Bibliography. Every effort will be made, however, to ensure these lists being as complete as possible.

The lists for 1900-1901 are ready and will be published as soon as possible, and it would render them more complete if editors of periodicals, secretaries of societies, and especially authors of papers in local journals, etc., would send copies to the editor of this journal at 259, Hyde Park Road, Leeds. Reprints and authors' separate copies should bear the name of the publication, the number of the volume or part, the *original* paging and the *actual* date of publication.

As regards dating, we would suggest to editors and secretaries that care be taken to give the actual date of publication on the wrapper of all parts of journals and transactions; there

is often difficulty and uncertainty, and we might instance some Transactions as not even stating the *year* of publication of the various parts. Bibliographers would greatly appreciate attention to this point.

The Watsonian vice-counties are adopted throughout these bibliographies as more convenient and uniform in extent than the political counties; those comprised within the North of England are the following:—

53, Lincoln S.; 54, Lincoln N.; 56, Notts.; 57, Derby; 58, Cheshire; 59, Lancashire S.; 60, Lancashire W.; 61, York S.E.; 62, York N.E.; 63, York S.W.; 64, York Mid W.; 65, York N.W.; 66, Durham; 67, Northumberland S.; 68, Cheviotland; 69, Westmorland with Furness and Cartmel; 70, Cumberland; and 71, Isle of Man; with their adjoining seas.

The use of the phrases 'Northern Counties,' 'Lake District,' 'Yorkshire,' etc., implies that the references are vague, or general in their application; the phrase 'All the Northern Counties' implies that every vice-county is represented by definite mention; in all other cases the vice-counties referred to are named.

1893.

A. Lacroix. — York N.E.

Les Enclaves des Roches Volcaniques [pp. 653, 654 and pl. 2, fig. 1; the demolition by fusion of a derived felspar crystal enclosed in the Cleveland dyke at Great Ayton]. Macon, 1893.

W. H. Wheeler. — Northd. S., Durham, York N.E., Lanc. S. and W., Chesh., Linc. N. and S.

Tidal Rivers, their (1) Hydraulics, (2) Improvement, (3) Navigation [investigating the motion of the water in an estuary, the formation of bars, the littoral drift, etc.; the Tyne, Tees, Mersey, Dee, Ribble, and Witham considered]. Roy. 8vo., pp. viii. + 467, 1893; London.

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Harry Speight. — York Mid W.

Nidderdale and the Garden of the Nidd: a Yorkshire Rhineland [with incidental notes on the geology and physical features]. 8vo., pp. 514; London, 1894.

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"The Thirlmere Works for the Water-Supply of Manchester" [Geological Notes]. Proc. Inst. Civil Engineers, Vol. 126, 1895-6, Part 4, pp. 2-23; discussion at pp. 68-125.

Edwin A. Walford. — Northern Counties.

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C. J. WOODWARD. NORTHERN COUNTIES.

"Crystallography for Beginners." London, 1896. Reviewed by "A. H[arker]." in Mineral. Mag., May 1897, pp. 222-3.

1899.

ANON. [not signed]. NORTHERN COUNTIES.

Home Office. | Mines and Quarries: | General Report and Statistics | For 1898. | Part I.—District Statistics. | Statistics of the Persons employed, output and | accidents at mines and quarries in the United | Kingdom, arranged according to the Inspection | Districts. . . | London | . . | 1899.

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A Record of, and Index to, | the Literature of | Echinodermata | published during the year 1898, | with a few items from previous years. | Compiled by F. A. Bather. | Reprinted, . . . from the Zoological Record for 1898. London: 1899 [briefly refers (p. 41) to Mr. Lamplugh's paper, in which *Bourgueticrinus?* is recorded from the Yorkshire Chalk]. 73 pp.

F. A. BATHER. CHESHIRE.

Pebble from the gravel at St. Margaret's, Bowdon (Cheshire) [exhibited at a meeting of the Geological Society, and compared with the pyramid pebbles of the 'diluvium' of the North German plain]. Geol. Mag., July 1899, pp. 332-333.

JAS. BEDFORD. ISLE OF MAN.

"Flint Implements in the Isle-of-Man" [specimens from Peel described (mainly 'rejected contributions'); as no flint occurs in situ on the island, the cores were either collected from the gravel or brought from Ireland]. Trans. Leeds Geol. Assn., 1897-8, publ. 1899, p. 13.

L. L. BELINFANTE [Editor; not signed]. NORTHERN COUNTIES.

Geological Literature | added to the | Geological Society's Library | during the | year ended December 31st, 1898. | . . | . . | London. | 1899. | . .

L. L. BELINFANTE [edited by]. NORTHERN COUNTIES.

Abstracts | of | The Proceedings | of the | Geological Society of London. | Session 1898-1899. | Nos. 697-713. | London: | . . | . . | 1899. . . | 128 pp. [Contains numerous abstracts of papers referring to the geology of the Northern Counties].

H. H. ARNOLD-BEMROSE. DERBYSHIRE.

Geology of the Ashbourne and Buxton Branch of the London and North Western Railway: Ashbourne to Crake Low [sections in the Boulder Clay; Trias, Mountain Limestone, and Yoredale beds]. Quart. Journ. Geol. Soc., Vol. 55, May 1899, pp. 224-238; Abstracts in Nature, 19th Jan. 1899, p. 287, and Geol. Mag., Feb. 1899, pp. 91-92; also summary by Edward A. Martin in Sci. Goss., March 1899, p. 298.

H. H. ARNOLD-BEMROSE. DERBYSHIRE.

A Sketch of the Geology of the Lower Carboniferous Rocks of Derbyshire. With special reference to the Long Excursion [of the

Geologists' Association] of 1899. Plates 3-7 [described under the heads of 'Introduction, Local Rock Formations, Mountain Limestone (Main Inlier, Ashover Inlier, Crich Inlier, Kniveton Inlier, Caverns and Underground water, Lead and Lead Mining, and Metamorphic Limestone), Yoredale Rocks, Millstone Grit, Sands and Fire Clays, Glacial Drift, Calcareous Tufa and Warm Springs, Igneous Rocks, Petrography, and References']. Proc. Geol. Assn., Vol. 16, Part 4, Aug. 1899, pp. 165-220.

H. H. Arnold-Bemrose. Derbyshire.

On a Sill and faulted Inlier in Tideswell Dale (Derbyshire) [endeavours to prove that the compact dolerite in the marble-quarry in Tideswell Dale is really a sill, as suggested by Sir A. Geikie in his 'Ancient Volcanoes of Great Britain']. Quart. Journ. Geol. Soc., 1899, pp. 239-249, with Map and Plates; Abstracts in Nature, 30th March 1899, p. 526, and Geol. Mag., May 1899, pp. 230-231.

H. Arnold-Bemrose and Wheelton Hind. Derbyshire.

Long Excursion to Derbyshire [describing the Lower Carboniferous Rocks, including the lead-mine at Mill Close, the Millstone Grit of Kinderscout, a fossiliferous quarry at Cavedale, the Blue John Mine, Miller's Dale and Tideswell Dale, the volcanic rocks in the Carboniferous at Tissington, etc.]. Proc. Geol. Assn., Nov. 1899, Vol. 16, pp. 221-225.

H. H. Arnold Bemrose. See 'Walcot Gibson' and 'Wheelton Hind.'

H. Bolton. Isle of Man.

The Palaeontology of the Manx Slates of the Isle of Man. [Specimens of *Dictyonema sociale* and *Dendrograptus flexuosus* found in splintery masses of the Manx Slates, which indicates that 'the stratigraphical position of the slates will be found ultimately to be either amongst the uppermost beds of the Cambrian system, or in the Arenig series']. Manchester Memoirs, Vol. 43, 4th May 1899, No. 1, 15 pp. and one plate; also issued as Notes from the Manchester Museum, No. 5, 1899.

Wm. E. Brady. York S.W.

Preservation of the Royston Shap Granite Boulder [placed in Locke Park, Barnsley; corrects the measurements given in a previous issue of 'The Naturalist']. Naturalist, April 1899, p. 124.

A. J. Jukes-Brown. See 'W. Whitaker.'

F. M. Burton. York S.E., Linc. N.

Lincolnshire Coast Boulders [considers that the southerly tidal action is altogether inadequate to account for the presence of boulders on the flat sandy coast of Lincolnshire; quotes from W. H. Wheeler and A. Atkinson in support of this view]. Naturalist, April 1899, pp. 105-111.

F. M. Burton. York S.E., Linc. N.

Lincolnshire Coast Boulders [a further contribution on the subject]. Nat., Nov. 1899, pp. 325-329.

J. Burton. York S.W.

Eskdale granite [at Balby, near Doncaster (in twelfth report of the Yorkshire Boulder Committee)]. Naturalist, Jan. 1899, p. 15.

J. Butterworth. Lanc. S.

Further Research on the Structure of *Psaronius*, a Tree-Fern of the Coal-Measures. Mem. and Proc. Manch. Lit. and Phil. Soc., Vol. 43, No. 2, 1899, pp. 1-8.

J. W. C[arr]. Nottingham.

Edward Wilson, F.G.S. [Obituary Notice; his work on the geology of Nottingham briefly referred to]. Ann. Rep. Nott. Nat. Soc. for 1897-8, publ. 1899, pp. 21-23, with photograph.

JOHN T. CARRINGTON. YORK N.E.

Meteorites [refers (p. 68) to the Meteorite which fell near Middlesbrough in 1881, which is now in the Newcastle Museum]. Sci. Goss., Aug. 1899, pp. 65-69; Sept. 1899, pp. 117-118.

W. LOWER CARTER. YORKSHIRE.

Excursions [of the Leeds Geological Association] in 1897 [briefly describes the various places visited]. Trans. Leeds Geol. Assn., 1897-8, publ. 1899, p. 33.

W. G. CLARKE. YORK N.E.

"Flint Jack": his Life-History [refers to Flint Jack's work in Yorkshire, etc.]. Trans. Norfolk and Norwich Nat. Soc., Vol. 6, Part 5, 1898-9, publ. 1899, pp. 463-468 and three plates.

FRANK CLOWES. DURHAM, LANC. S., CHESHIRE, NOTTS.

Deposition of Barium Sulphate as a Cementing Material of Sandstone [read to the Royal Society on 23rd February 1899; examples of sandstone containing sulphate of Barium occur at Bramcote and Stapleford, Notts.; Prenton and Bidston, Beeston, Alderley Edge, Oxton, Storeton, and Peakestones Rock, Alton]. Abstract in Nature, 16th March 1899, p. 476.

E. MAULE COLE. YORK N.E. AND S.E.

The Distribution of Moorlands in the East of Yorkshire, as explained by the Glacial History of the County [suggests that the glaciers planed the rocks and left bare districts, which are now the moors]. Proc. Yorks. Geol. and Polyt. Soc., Vol. 13, Part 4, 1899, pp. 400-401.

J. C[ORDEAUX]. YORK S.E.

In Memoriam. Henry Bendelack Hewetson [briefly refers to geological work in the Spurn neighbourhood]. Naturalist, Aug. 1899, pp. 237-240.

M. COSSMANN. NORTHUMBERLAND, YORKSHIRE, ETC.

[Review of] A Monograph of the British Carboniferous Lamelli-branchiata, Part 3, by Wheelton Hind. Revue Critique de Paléozoologie, Oct. 1899, pp. 156-157.

W. H. CROFTS. YORK S.E.

Post-Archæn (sic) Granite from Ångermanland [at Easington (in Twelfth Report of Yorkshire Boulder Committee)]. Naturalist, Jan. 1899, p. 15.

H. CROWTHER. YORK N.E.

"The Yorkshire Esk" [describes the various strata met with in a journey from Whitby to the Esklets, nearly 30 miles inland]. Trans. Leeds Geol. Assn., 1897-8, publ. 1899, p. 8-10.

S. W. CUTTRISS. YORK MID W.

Kingsdale and its Pot-Holes [gives a description of the geology of Whernside district and of descents of Jingling Pot, Rowten Pot, etc.]. Trans. Leeds Geol. Assn., 1897-8, publ. 1899, pp. 33-35.

S. W. CUTTRISS. YORK MID W.

Notes on the Caves of Yorkshire, Part II. [classifies them under the heads of Caves of Engulphment and Caves of Débouchure, and gives a further contribution to the study of the Limestone Caves of Yorkshire]. Proc. Yorks. Geol. and Polyt. Soc., Vol. 13, Part 4, 1899, pp. 433-443, Plates 63-4 and plan.

S. W. CUTTRISS. YORK MID W.

"Cave Hunting in Yorkshire" [describes the principal caverns of western Yorkshire]. Trans. Leeds Geol. Assn., 1897-8, publ. 1899, pp. 7-8.

J. R. Dakyns. York Mid W.

The Limestone Knolls of Craven [letter criticising J. E. Marr's paper on this subject]. Geol. Mag., Dec. 1899, p. 573.

J. R. Dakyns. York Mid W.

The Limestone Knolls below Skipton and Grassington in Craven. Quart. Journ. Geol. Soc., Vol. 55, 1899, pp. 359-361 ; Abstracts in Proc. Geol. Soc., 1899, p. 89 ; Nature, 25th May 1899, p. 94 ; and Geol. Mag., June 1899, p. 281.

Charles Davison. Northern Counties.

The Hereford Earthquake of 1896 [an abstract from the author's work on 'The Hereford Earthquake of 17th December 1896,' Birmingham]. Knowledge, 1st June 1899, pp. 121-124.

C. E. DeRance. Northern Counties.

Horizontal Thrusting in Joints, Mineral Veins and Faults in the North-West of England, etc. Trans. Inst. M.E., Vol. 14, 1899, pp. 415-426.

C. E. DeRance. Northern Counties.

The Occurrence of Anhydrite in the North of England [borings]. Trans. Inst. M.E., Vol. 14, 1899, pp. 75-84.

C. E. DeRance. Furness.

The Geology of Furness. Trans. Inst. M.E., Vol. 14, 1899, pp. 305-313, and Abstract in Coll. Guard., Vol. 78, 1899, p. 62.

Joseph Dickenson. Lanc. S., Cheshire, etc.

Subsidence caused by Colliery Workings [discussion on paper printed in a previous number]. Trans. Manch. Geol. Soc., Vol. 26, Part 2, pp. 50-81.

Joseph Dickenson [not signed]. Lanc. S.

Striated Boulder from Blackpool [from the clay near the Gynn, Blackpool, exhibited and described]. Trans. Manch. Geol. Soc., Vol. 26, Part 5, 1899.

Wilfrid Edgecombe. York Mid W.

Why People go to Spas [briefly refers to the properties of the Harrogate waters, etc.]. Nature, 31st Aug. 1899, Vol. 60, pp. 416-420.

D. Forsyth. Northern Counties.

"A Review of the Ice Age Question" [summarises the various theories which have been put forward to account for the superficial beds in Northern England]. Trans. Leeds Geol. Assn., 1897-8, publ. 1899, pp. 16-18.

C. Le Neve Foster. All Northern Counties.

Home Office. | Mines and Quarries: | General Report and Statistics | for 1898. | Part III.—Output. | General Report and Statistics relating to the | output and value of the Minerals raised in | the United Kingdom, the amount and value | of the metals produced, and the exports | and imports of Minerals. | Edited by C. Le Neve Foster, D.Sc., F.R.S. | . . | . . | London | . . | 1899, pp. 117-266.

Ant. Fritsch. Lanc. S.

Preliminary Note on *Prolimulus Woodwardi*, Fritsch, from the Permian Gaskohle at Nyran, Bohemia [amongst previously recorded Limuloid Crustaceans, *Prestwichia Birtwelli* H. Woodw. (1872) from the Coal Measures, Padiham, Lancashire, is mentioned]. Geol. Mag., Feb. 1899, pp. 57-59.

E. J. Garwood (Secretary). York Mid W.

Life-Zones in the British Carboniferous Rocks.—Report of the Committee . . . [refers to the collection of valuable specimens from the shales in the Millstone Grit at Eccup, near Leeds]. Rep. Brit. Assn., 1898 (Bristol), publ. 1899, pp. 529-530.

ARCHIBALD GEIKIE [Director-General]. DERBYSHIRE, ISLE OF MAN.

Summary of Progress of the Geological Survey of the United Kingdom for 1898 [with remarks by C. Fox-Strangways on the Triassic 'Waterstones' of Derbyshire and the drift of the Trent basin, and record by G. W. Lamplugh of a boring at the Point of Ayre traversing nearly 500 feet of drift and 422 feet of Keuper Marls with salt-bands]. Mem. Geol. Surv., publ. 1899, pp. 1-216 [135, 159, 167, 168]; see also Reviews in Nature, 21st Dec. 1899, pp. 181-183, and Geol. Mag., Nov. 1899, p. 521.

JOHN GERRARD. LANC. S.

An Outburst of Gas at Westleigh Colliery [in the Wigan 4-feet Mine, on 16th December 1898]. Trans. Manch. Geol. Soc., Vol. 26, Part 5, 1899, pp. 162-170.

JOHN GERRARD. LANC. S.

Note on an Outburst of Fire-Damp at Blainscough Colliery [in the Arley Mine, Welch Whittle, in the main level, on 6th November 1897]. Trans. Manch. Geol. Soc., Vol. 26, Part 5, 1899, pp. 171-172.

WALCOT GIBSON. NOTTS.

Some Recent Work among the Upper Carboniferous Rocks of North Staffordshire, and its bearing on concealed Coalfields [refers to the large areas between the known coalfields of Shropshire, North Staffordshire, and Nottinghamshire, which have not at present been explored, as regards the coal seams which may lie there at reasonable depths]. Geol. Mag., Nov. 1899, pp. 505-506.

WALCOT GIBSON AND WHEELTON HIND. CHESHIRE.

On a series of Agglomerates, ashes, and tuffs in the Carboniferous Limestone series of Congleton Edge. With an appendix on the petrography of the igneous rocks, by H. H. Arnold-Bemrose [After referring to the discovery of volcanic rocks in the upper part of the Carboniferous Limestone Series at Tissington, the authors describe evidence of volcanic action of the same age on the western slopes of Congleton Edge]. Abstracts in Nature, 6th July 1899, p. 239, and Geol. Mag., Sept. 1899, pp. 429-430.

J. G. GOODCHILD. CUMBERLAND.

The Soils of Cumberland [being introductory chapter in William Hodgson's Flora of Cumberland; reviewed in Naturalist, April 1899, pp. 115-116].

J. W. GREGORY. WESTMORLAND.

On *Lindstromaster* and the Classification of the Palæasterids [includes *Palæasterina primæva* (Forbes) from the Ludlow series, Underbarrow, Westmorland; and *Uraster ruthveni* (Forbes) from the Silurian, Westmorland]. Geol. Mag., Aug. 1899, pp. 341-354.

J. W. GREGORY.

Catalogue of the Fossil Bryozoa in the Department of Geology, British Museum (Natural History). The Cretaceous Bryozoa, Vol. I., pp. 14+457, and plates, 1899; Reviewed in Nature, 7th June 1900, p. 125 **[not seen].**

W. GREGSON. YORK N.E.

Shap Granite [at Mount Grace Priory, near Northallerton (in the twelfth report of the Yorkshire Boulder Committee)]. Naturalist, Jan. 1899, p. 15.

J. H. GRUNDY. YORK S.W.

Fossils from Millstone Grit [in a bed, a foot thick, just above the flagstones in a quarry in Pule Hill, near Huddersfield; the most abundant is *Bellerophon*; Gasteropods and Lamellibranchs, especially the genus *Myalina*, also occur]. Sci. Goss., Jan. 1899, p. 253.

Naturalist,

WILLIAM GUNN. NORTHERN COUNTIES.

Notes on the Correlation of the Lower Carboniferous Rocks of England and Scotland [endeavours to show that the group of Lower Scottish Limestones about Dunbar and round the Midlothian Coalfield does not represent any part of the Mountain Limestone of Yorkshire, but is the equivalent of the upper part of the Yoredale series of Phillips, while the Edge Coals and Upper Limestones of Midlothian represent a series of beds which in Yorkshire and Northumberland lie above the true Yoredale series of Phillips, and which were included by him in the Millstone Grit]. Trans. Edinburgh Geol. Soc., 1899, pp. 361-367.

W. J. HALL. DERBYSHIRE.

"Some Derbyshire Rocks" [a paper principally compiled from the illustrated guide to Derbyshire issued by the Geologists' Association; the Mountain Limestone, Millstone Grit, etc., referred to]. Trans. Leicester Lit. and Phil. Soc., Vol. 5, Part 6, Oct. 1899, pp. 314-317.

J. WALLING HANDBY. YORK MID W.

Cave Finds in Ribblesdale [describes the contents of a cavern discovered whilst blasting a limestone quarry near Moughton, Ingleborough; list of remains given]. Naturalist, Jan. 1899, p. 32.

ALFRED HARKER. CUMBERLAND, WESTMORLAND.

On the Average Composition of British Igneous Rocks [briefly refers to the Lake District Rocks, as compared with those of the Malverns]. Geol. Mag., May 1899, pp. 220-222.

ALFRED HARKER. CUMBERLAND, WESTMORLAND.

Chemical Notes on Lake District Rocks. I. The Ordovician Volcanic Series [gives the silica-percentages of 60 Lake District lavas and tuffs, etc.; and also a large number of specific gravities of rocks which are not examined chemically; contains a useful account of previous work on the same lines]. Naturalist, Feb. 1899, pp. 53-58.

ALFRED HARKER. CUMBERLAND, WESTMORLAND.

Chemical Notes on Lake District Rocks. II. Intrusive and Sedimentary Rocks [a continuation of the work referred to above]. Naturalist, May 1899, pp. 149-154.

ALFRED HARKER. CUMBERLAND, WESTMORLAND.

Lake District Rocks: Additional Note [gives nine additional rocks from the Ordovician Volcanic Series, and their specific gravities]. Naturalist, May 1899, p. 156.

ALFRED HARKER. LINC. N., YORK S.E.

The Southward Movement of Beach-Material across the Humber Gap [criticises F. M. Burton's paper on this subject in a previous issue, and contends that the boulders from the Holderness coast are eventually carried across the Humber Gap and distributed along the Lincolnshire coast]. Naturalist, May 1899, pp. 155-156.

ALFRED HARKER. YORK S.E., LINC. N.

The Source of the Lincolnshire Coast Boulders [still maintains that a great portion of the beach pebbles and boulders on the Lincolnshire coast are derived from the waste of the Holderness cliffs]. Naturalist, Dec. 1899, pp. 365-366.

A. HAWCRIDGE AND M. STABLES. LANC. N.

Report of the Geological and Antiquarian Section [briefly describes visits to Askam and Greenscoe Porphyry Quarry, etc.]. Ann. Report Barrow Nat. Field Club and Lit. and Sci. Assn., Vol. 13, 1899, pp. 12-14.

WM. HERDMAN. DURHAM.

Shap Fell Granite Boulder in Upper Teesdale [records boulder found in the London Lead Company's Park, Middleton-in-Teesdale]. Naturalist, April 1899, p. 124.

WHEELTON HIND. LANC. S.

On Three Species of Lamellibranchs from the Carboniferous Rocks of Great Britain [describes a new species of *Anthracomya* which occurs at Fallowfield in the Manchester Coalfield at horizons higher than that characterised by *A. phillipsi*]. Quart. Journ. Geol. Soc., 1899, pp. 365-370 and plate; Abstracts in Nature, 25th May 1899, p. 94, and Geol. Mag., June 1899, p. 281.

WHEELTON HIND. YORK MID W.

On the Occurrence in British Carboniferous Rocks of the Devonian Genus *Palæoneilo,* with a Description of a New Species [from the Carboniferous Shale (Yoredale Shale), south of Hammerton Hall, Slaidburn, Yorkshire; now in the Museum of Practical Geology, London]. Abstracts in Nature, 21st Dec. 1899, p. 191, and Geol. Mag., Jan. 1900, p. 45.

WHEELTON HIND. DERBYSHIRE, YORK N.W., NTHD. S.

The Sub-divisions of the Carboniferous Series in Great Britain and some of their European Equivalents [the various beds in Derbyshire, Wensleydale, Northumberland, and other parts of Great Britain, are carefully enumerated and described, and their lithological and palæontological characteristics pointed out and compared with the Carboniferous Beds on the Continent]. Trans. Edinburgh Geol. Soc., 1899, pp. 332-360.

WHEELTON HIND. CHEVIOTLAND, NORTHUMBD., ISLE OF MAN, YORK N.W., MID W., S.W., DERBYSHIRE.

A Monograph of the British Carboniferous Lamellibranchiata. Part IV. [describing and figuring the genera *Sedgwickia, Edmondia, Mytilomorpha,* and *Cypricardella,* with examples from Redesdale and Lowick, Bolland and Settle, Cayton Gill, West Witton, in Wensleydale, Thorpe Cloud and Castleton, and Poolvash]. 1899, pp. 277-360, Plates 26-39; see Review by M. Cossmann in Revue Critique de Paléozoologie, Oct. 1899, pp. 156-157.

WHEELTON HIND. See 'Walcot Gibson.'

WHEELTON HIND. See 'Arnold-Bemrose.'

G. J. HINDE. LAKE DISTRICT, ETC.

Prof. H. A. Nicholson, M.D., D.Sc., F.R.S., F.L.S., F.G.S. [Obituary notice; refers at some length to Nicholson's work in the Lake District, etc.]. Geol. Mag., March 1899, pp. 138-144.

WILLIAM HODGSON. CUMBERLAND.

Flora of Cumberland | . . . | . . . | . . . | . . **by** | **William Hodgson** | . . . | . . | . . . | . . . | with an Introductory Chapter | on the Soils of Cumberland, by | J. G. Goodchild | . . | . . | with a map of the County | . . | . . | . . | . . . | pp. xxxvi. + 398. [Contains essay on the Soils of Cumberland by J. G. Goodchild; reviewed in Naturalist, April 1899, pp. 115-116].

BENJAMIN HOLGATE. YORK S.W.

"Some Points of Comparison between the Plants of the present and those of the Coal Measure Period" (illustrated by a fine series of specimens collected from the coals and shales of the South Leeds district by Mr. Bond]. Trans. Leeds Geol. Assn., 1897-8, publ. 1899, pp. 19-20.

B. HOLGATE. YORK MID W.

"The Geology of the Meanwood Valley and the District to the North of it" [sections in the Ganister, Millstone Grit, etc., described]. Trans. Leeds Geol. Assn., 1897-8, publ. 1899, pp. 35-36.

T. V. HOLMES. CUMBERLAND.

The Geology of the Country around Carlisle [describing the Permian and Triassic formations (St. Bees Sandstone, Gypseous Shales, Kirklinton Sandstone, and Stanwix Shales), the outlier of Lower Lias,

and the various superficial deposits (with an account of the Solway Moss)]. Mem. Geol. Surv. Engl. and Wales, 1899, pp. iv. + 64, London.

W. F. Holroyd and J. Barnes. Derbyshire.

On the Superposition of Quartz Crystals on Calcite in the Igneous Rocks occurring in the Carboniferous Limestone of Derbyshire [describes and figures such crystals from the 'toadstone' of Miller's Dale]. Trans. Manch. Geol. Assn., 1899, Vol. 26, Part 2, pp. 46-49.

E. Howarth. Derbyshire, Yorkshire.

Catalogue | of the | Bateman Collection of Antiquities | in the | Sheffield Public Museum. | Prepared by | E. Howarth, F.R.A.S., F.Z.S., | . . | . . | London | . . | 1899. [Contains details and illustrations of numerous objects from the pre-historic Burial-mounds of Yorkshire, Derbyshire, etc.]. pp. xxiv. + 254. [Reviewed in Geol. Mag., Jan. 1901, pp. 37-40].

J. H. Howarth. York Mid W.

The Underground Waters of Craven. Part I. The Sources of the River Aire. [Pamphlet of 12 pp. (no date) issued by the Yorkshire Geological and Polytechnic Society [not shown], and distributed at the Meeting of the British Association at Dover, 1899; is divided into five sections, viz., Abstract of Reports, The Chemical Investigation, Engineers' Report, Geological Structure of the District, and General Conclusions; with plan, section and diagrams].

J. H. Howarth. Westmorland, York S.E. and N.E.

"Composition of Felspars" [sections of specimens from Shap, and from boulders from Robin Hood's Bay and 'Birstwith' [Burstwick] described in illustration]. Trans. Leeds Geol. Assn., 1897-8, publ. 1899, pp. 14-15.

J. H. Howarth. See 'Percy F. Kendall.'

Henry H. Howorth. Northern Counties.

The Scandinavian Ice-sheet and the Baltic Glacier: A Sceptical Commentary [brings further evidence in favour of his view that the Scandinavian erratics were scattered by 'a vast torrential flood']. Geol. Mag., Jan. 1899, pp. 4-13 and Plate 1.

William E. Hoyle. Lanc. S., Yorkshire, etc.

The Manchester Museum | Owens College | Museum Handbooks | General Guide | to the | Natural History Collections | by | William E. Hoyle, M.A. (Oxon), F.R.S.E. | Director of the Museum | . . | . . | Manchester | 1899 [briefly describes several North of England geological specimens contained in the Museum, some of which are figured].

T. Rupert Jones and Henry Woodward. York S.W.

A Monograph of the British Palæozoic Phyllopoda. Part IV., pp. i.-xv., 175-211, Plates 26-31. [with description and figures of *Dithyrocaris insignis* (sp. nov.) from Eccup, *Chœnocaris tenuistriata* from Settle, and *Dithyrocaris dunnii* from tail-pieces found by Mr. John Dunn in Redesdale Shales, Northumberland]. Palæontographical Soc., Vol. 53, 1899.

T. Rupert Jones [Secretary]. York Mid W.

The Fossil Phyllopoda of the Palæozoic Rocks. Fourteenth Report of the Committee . . . . [refers to a very interesting collection of remains of *Dithyrocaris* from the Shales of the Millstone Grit at Eccup, near Leeds]. Report Brit. Assn. (Bristol), 1898, publ. 1899; see also Geol. Mag., Jan. 1899, pp. 28-30.

A. J. Jukes-Browne. See 'W. Whitaker.'

P. Q. Keegan. Cumberland.

Striæ as Evidence of Ice-Action [considers that 'the grand rocks edging the valley where the Derwentwater reposes,' which 'have been

found carved and grooved with striæ, all pointing in the same direction,' have not been scratched by the action of land ice, but that the grooves have been formed by 'the inroads of the weather, lichens, etc.']. Sci. Goss., Dec. 1899, p. 222.

JAMES KEEN. LANC. S.

Description of sinking two shafts through heavily-watered strata at Maypole Colliery, Abram, near Wigan, for the Moss Hall Coal Company, Limited, Wigan [details of 'section of strata, No. 2 Pit shaft' (603 yards 2 feet 11 inches) given at end of paper]. Trans. Manch. Geol. Soc., Vol. 26, Part 4, 1899, pp. 122-156; discussion continued in Vol. 26, Part 5, 1899, pp. 159-161.

P. F. KENDALL. YORK S.E.

Nodule of black flint [at Market Weighton (in the Yorkshire Boulder Committee and its Twelfth Year's Work)]. Naturalist, Jan. 1899, p. 15.

PERCY F. KENDALL. WESTMORLAND.

"The Geology of the Appleby District" [gives an account of an excursion and the various beds then examined]. Trans. Leeds Geol. Assn., 1897-8, publ. 1899, pp. 48-50.

PERCY F. KENDALL. YORK S.E. AND N.E., LINC. N.

"The Norwegian Ice-Sheet" [reviews the literature on the subject, and refers to the various pieces of evidence in support of the theory that the glacial beds of Eastern Yorkshire and Lincolnshire were deposited by ice from Scandinavia; a recent visit of writer to Southern Norway enables him to identify several boulders from the East Coast boulder-clay]. Trans. Leeds Geol. Assn., 1897-8, publ. 1899, pp. 46-48.

PERCY F. KENDALL. YORK N.E. AND S.E.

"Progress of Geology during the past year" [refers to the discovery of a striated rock surface at Robin Hood's Bay, and to additional light thrown upon the boulders of Eastern Yorkshire by a visit to this country by Dr. Munthe, of Upsala]. Trans. Leeds Geol. Assn., 1897-8, publ. 1899, pp. 29-30.

PERCY F. KENDALL. YORKSHIRE.

"The Physical Geography of Yorkshire" [deals with the history of the various beds found in Yorkshire from Silurian or Ordovician to recent; and concludes with some observations on the rivers of the county]. Trans. Leeds Geol. Assn., 1897-8, publ. 1899, pp. 20-22.

P. F. KENDALL [Secretary]. YORKS., LINCS.

Erratic Blocks of the British Isles. Report of the Committee. . . . . [Consists entirely of Yorkshire and Lincolnshire Records]. Rep. Brit. Assn., 1898 (Bristol), publ. 1899, pp. 552-556.

PERCY F. KENDALL AND J. H. HOWARTH. YORKSHIRE.

The Yorkshire Boulder Committee and its Twelfth Year's Work, 1897-8 [several Yorkshire specimens have been taken over to Norway by Mr. Kendall and identified with Scandinavian rocks by Prof. Brögger; the principal lines of progress made by the Committee reviewed, etc.]. Naturalist, Jan. 1899, pp. 13-19.

P. M. C. KERMODE [Secretary]. ISLE OF MAN.

Irish Elk Remains . . . Report of Committee . . . appointed to examine the Conditions under which Remains of the Irish Elk are found in the Isle of Man [gives measurements of bones of a skeleton found in a marl pit at Close-y-Garey; with list of plant remains, etc.]. Rep. Brit. Assn., 1898 (Bristol), publ. 1899, pp. 548-551; also in Geol. Mag., Feb. 1899, pp. 72-75.

P. M. C. KERMODE. ISLE OF MAN.

Report of Geological Section. Yn Lioar Manninagh, Vol. 3, 1899, pp. 486-488.

HERBERT KYNASTON. CHEVIOTLAND.

Contributions to the Petrology of the Cheviot Hills [gives stratagraphical and detailed petrological description of the Cheviot Granite, the Dykes and Sills, and discusses the relations between the Granite, the Dykes, and the Andesites]. Trans. Edinburgh Geol. Soc., 1899, pp. 390-415, with map and plates.

G. W. LAMPLUGH. ISLE OF MAN.

On some effects of Earth-Movement on the Carboniferous Volcanic Rocks of the Isle of Man. Abstract in Proc. Geol. Soc., 1899, pp. 22-23.

G. W. LAMPLUGH. See 'W. Whitaker' and 'A. J. Jukes-Browne.'

CHARLES LAPWORTH. NORTHERN COUNTIES.

An | Intermediate | Text-Book of Geology | by | Chas. Lapworth | F.R.S., etc. | . . | . . | . . | . . | . . | . . | . . | . . | . . | Edinburgh and London | 1899 | . . | [Frequently refers to the Geology of Northern England].

ROBERT LAW. YORK S.W.

On recent Pre-historic "Finds" in the Neighbourhood of Todmorden, Yorkshire [describes urns and other relics of British date from a burial mound]. Proc. Yorks. Geol. and Polyt. Soc., Vol. 13, Part 4, 1899, pp. 444-448 and Plate 66.

R. LAW. YORK S.W.

In Memoriam. James Spencer [refers to his work amongst the Yorkshire Coal Measures, etc.]. Proc. Yorks. Geol. and Polyt. Soc., Vol. 13, Part 4, pp. 473-476.

R. L[YDDEKER]. LAKE DISTRICT.

Professor Alleyne Nicholson [obituary notice; refers at some length to Nicholson's geological work in the Lake District; notably amongst the Stromatoporoids and the Graptolites]. Nature, 26th Jan. 1899, pp. 298-299.

J. LOMAS. CHESHIRE, ISLE OF MAN.

On Worked Flints from Glacial Deposits of Cheshire and the Isle of Man [states that flints of undoubted human workmanship have been obtained from the Glacial Gravels and Boulder Clay of the Wirral and the Isle of Man; gives list of localities]. Rep. Brit. Assn., 1898 (Bristol), publ. 1899, p. 882; also Geol. Mag., Feb. 1899, p. 80; and Proc. Liverp. Geol. Soc., 1899, Vol. 8, pp. 334-346.

J. LOMAS. NORTHERN COUNTIES.

The Characteristic Lithological Characters of the Principal Geological Systems. Proc. Liverp. Geol. Soc., Vol. 8, Part 3, 1899.

H. LOUIS. DURHAM.

A History of Coal-Mining [being a review of 'Annals of Coal-Mining and the Coal Trade, 1898,' by R. L. Galloway; ancient coal-mining in Durham, etc., referred to]. Nature, 9th Feb. 1899, pp. 337-338.

R. TAYLOR MANSON. DURHAM, YORK N.W.

Zig-Zag Ramblings of a Naturalist. Parts 2 and 3 [contain numerous references to the Glacial and Solid Geology of the Darlington neighbourhood]. Darlington, 1898-99, 216 pp.

H. G. MANTLE. CUMBERLAND.

The Skiddaw Granite of Syning Gill, Cumberland. Proc. Birming. N. H. Phil. Soc., 1899, Vol. 11, pp. 1-5.

J. E. MARR. CUMBERLAND.

Note on a Conglomerate near Melmerby (Cumberland) [describes a typical case of production of striæ by earth movements on a rock surface, and also on the surfaces of pebbles]. Quart. Journ. Geol. Soc., 1899, Vol. 55, pp. 11-13; Abstract in Geol. Mag., Jan. 1899, p. 45.

J. E. Marr. York Mid W.

On Limestone-knolls in the Craven District of Yorkshire and elsewhere [attempts to show that knoll-structure is produced by orogenic movements]. Quart. Journ. Geol. Soc., Vol. 55, 1899, pp. 327-358; Abstracts in Proc. Geol. Soc., 1898-9, pp. 88-89; Nature, 25th May 1899, p. 94, and Geol. Mag., June 1899, pp. 279-280.

Edward A. Martin. Derbyshire.

Volcanic Ash in the Yoredale Beds [summarises H. H. Arnold-Bemrose's paper read to the London Geological Society on the sections exhibited in the cuttings on the Ashbourne and Buxton Branch of the London and North Western Railway]. Sci. Goss., March 1899, p. 298.

Edward A. Martin. Cumberland.

Conglomerate in Cumberland [summary of paper read to the London Geological Society on the Conglomerates near Melmerby, in Cumberland, by J. E. Marr]. Sci. Goss., March 1899, p. 318.

Arthur J. Maslen. Lanc. S., York S.W.

Some recent work on the Anatomy of Fossil Plants [summarising the recent work done by different authors in reference to the various types of fossil plants; examples from the Lancashire Coalfield, the Halifax Coal Measures, etc., being cited]. Natural Science, May 1899, pp. 364-374.

Arthur J. Maslen. Lanc. S.

On the Structure of *Lepidostrobus*. Abstract of paper read to Linn. Soc., Jan. 1899; Nature, 12th Jan., p. 264.

F. Meeson. Nottinghamshire.

Excursion to Nottingham [describing visit to Clifton Colliery, Permian Marls and Magnesian Limestone at Bulwell, etc.]. Proc. Geol. Assn., Nov. 1899, Vol. 16, pp. 225-226.

L. C. Miall. Yorkshire [Mid W.?].

A Yorkshire Moor [Geology briefly referred to]. Proc. Roy. Inst. Great Britain, Vol. 15, Part 3, August 1899, pp. 621-640.

J. R. Mortimer. York N.E.

The So-called British Habitations on Danby North Moor [considers that this series of pits is an assemblage of primitive habitations, and is in no way connected with mining operations]. Proc. York. Geol. and Polyt. Soc., Vol. 13, Part 4, pp. 406-418.

John Robert Mortimer. York S.E.

The Chalk Water Supply of Yorkshire [gives an account of the geological structure of the East Riding, and the result of several years' examination of the water supply of the area]. Trans. Hull Scientific and Field Nat. Club, Vol. 1, Part 2, 1899, pp. 31-36.

G. H. Morton. Lanc. S.

Description of a Geological Map of Liverpool. Proc. Liverp. Geol. Soc., Vol. 8, Part 3, 1899, pp. 365-381, and Trans. Manch. Geol. Soc., Vol. 26, 1899, pp. 197-205.

G. H. Morton. Lanc. S., Cheshire.

The Age of the Vale of Clwyd [briefly refers to the post-Triassic faults in South-West Lancashire and West Cheshire, etc.]. Geol. Mag., May 1899, pp. 231-232].

R. Newstead [not signed]. Cheshire.

Curator's Report [including mention of a large and valuable collection of Fossil Footprints of *Cheirotherium storetonense*, which makes the collection of the Chester Society the finest of its kind in Great Britain]. Ann. Rep. Chester Soc. Nat. Sci., etc., for 1898-99, publ. 1899, p. 11.

R. Bullen Newton. Cheviotland.

On *Archanodon Jukesi* (Forbes MS.), Baily, sp., from the Old Red Sandstone of Monmouthshire [refers to the discovery of this shell, associated with stems of *Calamites,* etc., in the sandstones of north Northumberland in 1878 by Richard Howse]. Geol. Mag., June 1899, pp. 245-251.

E. A. Woodruffe Peacock. York S.E., Linc. N.

In Memoriam. John Cordeaux, J.P., F.R.G.S., M.B.O.U. [Geological work briefly referred to]. Naturalist, Sep. 1899, pp. 280-284.

Edward Adrian Woodruffe Peacock. Linc. S.

Lincolnshire Naturalists at Hartsholme [near Lincoln: Geology briefly referred to]. Naturalist, Sep. 1899, pp. 285-287.

H. M. Platnauer. Yorkshire.

"The Work of the Ouse" [gives the result of some experiments conducted with respect to the amount of solid matter brought past York by the waters of the Ouse; estimates that 300,000 tons are thus carried away annually]. Ann. Report Yorkshire Phil. Soc. for 1898, publ. 1899, pp. 36-38.

Henry Preston. Linc. S.

Air Blasts below ground [a tremendous blast of fresh air from a fissure met with at a depth of 106 feet at Boothby Pagnell]. Naturalist, Oct. 1899, pp. 289-290.

T. Mellard Reade. Lanc. S., Cheshire.

Foraminiferal Boulder Clay, Riverside, Cheshire [gives lists of species collected from the Boulder-Clay, nearly all of which are referable to species at present living in shallow water off the British coast]. Proc. Liverp. Geol. Soc., 1898-1899, publ. 1899, pp. 357-364.

T. Mellard Reade. Lanc. S., Cheshire.

The Gypsum Boulder of Great Crosby [contains about 280 cubic feet, and weighs about 18 tons; and has now been set up at Great Crosby in the same position and orientation as it originally occurred in the Boulder Clay; list of foraminifera from the clay given]. Proc. Liverp. Geol. Soc. for 1898-1899, publ. 1899, pp. 347-356, and 3 plates.

F. R. C. Reed. York Mid W.

The Limestone Knolls of the Craven District [letter criticising J. E. Marr's paper on this subject]. Geol. Mag., Nov. 1899, pp. 527-528.

F. R. Cowper Reed. York Mid W.

Woodwardian Museum Notes: A New Carboniferous Trilobite [named *Phillipsia cracoensis,* collected by Prof. Hughes' geological party from the Pendleside Limestone of Butterhaw Knoll, Cracoe, Yorkshire; figured]. Geol. Mag., June 1899, pp. 241-245.

Clement Reid. Yorkshire, etc.

The Origin of the British Flora. London, 1899, pp. vi. + 191; Reviewed in Natural Science, Sept. 1899, pp. 226-227, and Geol. Mag., Aug. 1899, pp. 424-429.

Dietrich Reimer. All the Northern Counties.

Carte Géologique internationale de l'Europe [Livraison 3 contains the British Isles, etc.]. 1899.

William Z. Ripley. Northern Counties.

A | Selected Bibliography | of the | Anthropology and Ethnology | of Europe | by | William Z. Ripley | Ph.D. | . . | . . | . . | . . | Boston [U.S.A.] . . | . . | 1899 [an extensive list of the principal publications on the subjects named, in alphabetical order]. 160 pp.

J. F. Robinson. York S.E.

Basalt [Boulder at Wassand (in the Twelfth Report of the Yorkshire Boulder Committee)]. Naturalist, Jan. 1899, p. 15.

HAROLD SALES. YORK S.E.

[Boulders at] Willerby near Hornsea [should be 'near Hull' (in Twelfth Report of the Yorkshire Boulder Committee)]. Naturalist, Jan. 1899, p. 15.

R. F. SCHARFF. ISLE OF MAN, ETC.

The History of the European Fauna. London, 1899, pp. vii. + 364 [see Review in Nature, 8th Feb. 1900, pp. 341-342].

D. H. SCOTT. LANC. S.

On a new Medullosa from the Lower Coal Measures of Lancashire [found by Messrs. Lomax and Wild at Hough Hill; the specimens being from a lower horizon than those previously recorded]. Rep. Brit. Assn., 1898 (Bristol), publ. 1899, pp. 1045-1046.

D. H. SCOTT. LANC. S.

On *Medullosa anglica*, a new representative of the Cycadofilices [the author has examined a large number of specimens of a new species of the genus *Medullosa*, discovered by Messrs. Wild and Lomax in the Ganister beds (Lower Coal Measures) of Lancashire]. Proc. Royal Soc., Vol. 64, 1899, pp. 250-253; Abstract in Nature, 16th Feb. 1899, pp. 381-382.

H. G. SEELEY. CHESHIRE.

On a Monotreme Footprint from the Trias at Stourton. Quart. Journ. Geol. Soc., 1899, p. lxxxix., and Abstracts in Proc. Geol. Soc., 1898-99, pp. 102-103, and Geol. Mag., July 1899, p. 329.

A. C. SEWARD. LANC. S.

Notes on the Binney Collection of Coal-Measure Plants. Part I. Lepidophloios. Part II. Megaloxylon, gen. nov. Proc. Cambridge Phil. Soc., Vol. 10, 1899, pp. 137-174, with two plates and five figures; Abstract in Nature, 30th March 1899, p. 527.

A. C. SEWARD. LANC. S.

Notes on the Binney Collection of Carboniferous Plants. II. A new type of Palæozoic plant [a fragment of a stem from the Coal-Measures of Lancashire]. Camb. Univ. Reporter, 23rd May 1899, Vol. 29, p. 919; Abstract in Nature, 1st June 1899, p. 119.

A. C. SEWARD. YORK N.E.

On the Structure and Affinities of *Matonia pectinata*, R. Br., with Notes on the Geological History of the Matonineæ [contains numerous references to the Jurassic flora of Yorkshire; and figures (p. 198) Pinnule of *Laccopteris woodwardi*, from the Inferior Oolite of Yorkshire, and *Laccopteris polypodioides* from the Upper Shale, Gristhorpe Bay]. Phil. Trans. Royal Soc., Series B, Vol. 191, 1899, pp. 171-209 and Plates 17-20.

THOMAS SHEPPARD. YORKSHIRE.

Work of the Ouse [summarises Platnauer's notes on this subject (see 'H. M. Platnauer') and points out their bearing on the origin of the Humber mud]. Sci. Goss., June 1899, pp. 24-25.

THOMAS SHEPPARD. YORK S.E.

The Mortimer Museum. | Suggested Purchase | By the | Hull Corporation [containing details of the geological and archæological contents of the Museum]. Hull, 8 pp., 1899, privately printed.

T. SHEPPARD. YORK S.E.

The Contents and Origin of the Gravels around Hull [the gravels are divided under three heads: (1) pre-glacial, (2) glacial, and (3) post-glacial; and their mammaliferous and other contents are described and correlated]. Trans. Hull Sci. and Field Nat. Club, Vol. 1, Part 2, 1899, pp. 45-51; and Plate 2, figs. 1 and 2 showing photographic views of the Burstwick and Kelsey Hill Gravel Pits.

THOMAS SHEPPARD. YORK S.E

Note on a Bronze Celt recently found in Holderness [at Burstwick; previous similar finds enumerated]. Trans. Hull Sci. and Field Nat. Club, 1899, Vol. 1, Part 2, pp. 52-54.

T. SHEPPARD [Hon. Sec.]. YORK S.E.

Hull Scientific and Field Naturalists' Club [portion of mammoth tusk and other geological specimens from the Yorkshire coast exhibited at a meeting on 1st Feb.]. Sci. Goss., March 1899, p. 319.

THOMAS SHEPPARD. ALL THE NORTHERN COUNTIES.

Bibliography: Papers and records published with respect to the Natural History and Physical Features of the North of England. Geology and Palæontology, 1894 [enumerates titles, etc., of 220 papers]. Naturalist, March 1899, pp. 81-96; April, pp. 97-103.

THOMAS SHEPPARD. ALL THE NORTHERN COUNTIES.

Bibliography: Papers and records published with respect to the Natural History and Physical Features of the North of England. Geology and Palæontology, 1895 [contains titles, summaries, etc., of 205 papers published during 1895]. Naturalist, Oct. 1899, pp. 305-320, and Nov., pp. 321-324.

T. SHEPPARD. YORK N.E.

Lake Dwellings at Pickering [a resumé of Captain the Hon. Cecil Duncombe's paper which appeared in the Journal of the Anthropological Institute for August and November, 1898]. Naturalist, April 1899, p. 112.

THOMAS SHEPPARD. YORK S.E.

[Boulders at] Atwick, Brough, Dimlington, Easington, [etc., including new localities for Shap granite, rhomb-porphyry, etc.; also notes chalk, belemnites, and sea-urchins in the boulder clays which are foreign to the Yorkshire Chalk (in the Twelfth Report of the Yorkshire Boulder Committee)]. Naturalist, Jan. 1899, pp. 16-18.

T. S[HEPPARD]. YORK S.E.

Skull of *Anas boscas* from the peat at Withernsea [describes the skull of a duck found by T. Pygas, junr.]. Trans. Hull Sci. and Field Nat. Club, Vol. 1, Part 2, 1899, p. 44.

T. S[HEPPARD]. YORK S.E.

Skull of Elephant at Kilnsea [found on the beach by Mr. Murray; uncertain whether a recent specimen or a fossil]. Trans. Hull Sci. and Field Nat. Club, 1899, Vol. 1, Part 2, p. 54.

WILLIAM SIMPSON. YORK S.W.

Record of a Boring made through the Grit Rocks of Halifax, in 1898-9: with notes thereon [to a depth of 508 feet from the surface; details given]. Halifax Naturalist, Vol. 4, No. 23, Dec. 1899, pp. 81-84.

H. P. SLADE. YORK S.E.

Our Water Supply [describes the effect of the recent drought in different parts of the country, and shows that the water supply of Hull will amply meet the needs of the population at that place for many years to come]. Trans. Hull Sci. and Field Nat. Club, Vol. 1, Part 2, 1899, pp. 29-31.

F. W. SMITH. YORK MID W.

The Natural Waters of Harrogate [not seen]. Reviewed in Nature, 11th May 1899, p. 28.

W. J. SOLLAS. DERBYSHIRE.

On the Occurrence of Sponge-spicules in the Carboniferous Limestone of Derbyshire. Quart. Journ. Geol. Soc., 1899, pp. 716-717; Abstracts in Geol. Mag., June 1899, p. 278, and Nature, 27th April 1899, p. 622.

E. J. Burgess Sopp. Cheshire.

Submerged Forests near Hoylake [describes the various beds of peat exposed on the Cheshire shores; and refers to their former fauna and flora, and also to the numerous archæological relics found therein, amongst which are no fewer than 42 Roman fibulæ; two views of the peat beds accompany the notes]. Sci. Goss., Aug. 1899, pp. 81-83.

H. Speight. Lanc. W.

Shap Granite [at Morecambe (in the Twelfth Report of the Yorkshire Boulder Committee)]. Naturalist, Jan. 1899, p. 15.

James Spencer. York S.W.

The Yoredale and Millstone Grit Rocks of the Upper Calder Valley and their Fossils [dealt with under the heads of 'Third Grit Rocks,' 'Rough Rocks,' 'Description of the Strata along the line of Section I.,' 'The Character and Thickness of the Strata Shown in Section I.,' and 'Section of the Millstone Grit Rocks from west to east along the south side of the river Calder'; with sections and lists of fossils from the Yoredale and Millstone Grit Shales]. Proc. Yorks. Geol. and Polyt. Soc., Vol. 13, Part 4, 1899, pp. 375-394.

L. J. Spencer. Northern Counties.

Supplementary List of British Minerals. Geol. Mag., Feb. 1899, pp. 75-77.

M. Stables. See 'A. Hawcridge.'

J. W. Stather. York N.E.

[Boulders at] Scalby Mills, Burniston, [etc., including several new records for Shap Granite (in the Twelfth Report of the Yorkshire Boulder Committee)]. Naturalist, Jan. 1899, pp. 18-19.

Mark Stirrup. Northern Counties.

Report of the Delegate to the British Association Meeting at Bristol, 1898 [refers to papers read at the meeting which bear upon the Geology of the northern counties]. Trans. Manch. Geol. Soc., Vol. 26, Part 2, 1899, pp. 82-92.

Mark Stirrup. Lanc. S.

The Earthquake of February 27, 1899 [Manchester, etc.]. Trans Manch. Geol. Soc., Vol. 26, 1899, pp. 174-176.

Mark Stirrup. Lanc. S.

Occurrence of a Gypsum Boulder at Blackpool. Trans. Manch. Geol. Soc., Vol. 26, 1899, p. 179.

A. H. Stokes. Derbyshire.

Castleton: History, Geology, Minerals, and Mining. Coll. Guard., Vol. 78, 1899, pp. 553-554.

A. Strahan. Cumberland, Lanc. S.

The Age of the Vale of Clwyd [compares the arrangement of the faults in the Vale of Clwyd with that of the faults in West Cumberland, South Lancashire, etc.]. Geol. Mag., March 1899, pp. 111-117.

C. Fox-Strangways. Derbyshire.

Third Excursion [of the Leicester Literary and Philosophical Society] to Swadlincote, Ticknall, and Melbourne [on 17th June, 1899, with geological notes and section]. Trans. Leicester Lit. and Phil. Soc., Vol. 5, Part 6, Oct. 1899, pp. 303-305.

Lord de Tabley. Cheshire.

The Flora of Cheshire [edited by Spencer Moore; with a Biographical Notice of the Author by Sir Mountstuart Grant Duff, pp. cxiv. + 399, with portrait and map, London, 1899. Geology referred to; **not seen].** See Review in Nature, 1st June 1899, p. 100.

Naturalist,

BEEBY THOMPSON. LINC. S.

Excursion to Weldon, Dene, and Gretton [visits to Weldon and Corby (Upper Lias clays), Corby and Weldon (ironstone), Great Weldon stone-quarries, Dene (section of Lower Oolites and Northampton Sands), and Gretton (ironstone)]. Proc. Geol. Assn., Nov. 1899, Vol. 16, pp. 226-231.

BEEBY THOMPSON.

Geology of the Great Central Railway [new extension to London of the Manchester, Sheffield, and Lincolnshire Railway]: Rugby to Catesby. Abstract in Geol. Mag., Jan. 1899, pp. 45-46.

A. THORNLEY. NOTTS.

The Functions of a Natural History Society (the Presidential Address of the Rev. A. Thornley, M.A., F.L.S., F.E.S.) [suggests lines of research, and briefly refers to the geology of the county of Nottingham]. Ann. Report Notts. Nat. Soc., 1897-8, publ. 1899, pp. 25-30.

ROBERT F. TOMES. YORK S.E.

Observations on some British Cretaceous Madreporaria, with the Description of two New Species [refers to specimens of *Caryophyllia* (now *Trochocyathus*) *conulus* from the Speeton Clay, etc.]. Geol. Mag., July 1899, pp. 298-307.

J. W. H. TRAIL. LAKE DISTRICT.

Henry Alleyne Nicholson, M.D., D.Sc., F.R.S., etc. [Obituary Notice of; refers to his work amongst the Lake District rocks, etc.]. Natural Science, March 1899, pp. 247-248.

W. Y. VEITCH. YORK N.E.

Pre-historic Middlesbro' [brief geological notes, and describes some pre-historic skulls and other objects]. Proc. Cleveland Nat. Field Club, 1896-1897-1898, publ. 1899, pp. 5-12.

J. CONWAY WALTER. LINC. N.

Records of Woodhall Spa and Neighbourhood: Historical, Anecdotal, Physiographical, and Archæological, with other matter. Horncastle, 1899, p. 263. [Brief geological notes].

J. CONWAY WALTER. LINC. N.

Boulders near Horncastle [describes a series of large boulders of Spilsby Sandstone, etc., at Langton]. Naturalist, Sep. 1899, pp. 273-274.

W. W. WATTS (Secretary). CUMBD., LANC., WESTMORLAND, YORKS.

Photographs of Geological Interest in the United Kingdom. Ninth Report of the Committee. . . . [includes particulars of photographs of sections in the northern counties, notably from Yorkshire]. Rep. Brit. Assn. (Bristol), 1898, publ. 1899, pp. 530-546.

C. B. WEDD. NOTTS.

Note on Barium Sulphate in the Bunter Sandstone of North Staffordshire [refers to previous records of Barium Sulphate as a cementing material in the Triassic Sandstone near Nottingham]. Geol. Mag., Nov. 1899, p. 508.

EDGAR D. WELLBURN. YORK S.W. AND LANC. S.

Fish Fauna of the Lower Coal Measures of the Halifax and Littleborough Districts [describes the remains of twenty-four species of Carboniferous fishes, with remarks as to their distribution, etc.] Proc. Yorks. Geol. and Polyt. Soc., Vol. 13, Part 4, 1899, pp. 419-432, Plates 61-62.

EDGAR D. WELLBURN. YORK MID W. AND S.W.

On Some Fossil Fish found in the Millstone Grits of Yorkshire [describes specimens of *Acanthodes* sp.? and *Acrolepis hopkinsi* from the

Middle Millstone Grits of Eccup; *Acanthodes wardi* from the base of the Third Grit at Boulder Clough, Sowerby, and *Acrolepis hopkinsi,* and *Cladodus* (*mirabilis* Agassiz?) from the Millstone Grit, Wadsworth Moor, etc.]. Proc. Yorks. Geol. and Polyt. Soc., Vol. 13, Part 4, 1899, pp. 395-399, and Plate 60.

EDGAR D. WELLBURN. YORK S.W.

On a New Species of *Lepracanthus* from the Yorkshire Coal Measures [spine of *Lepracanthus rectus*, sp. nov. from the shale above the Better Bed Coal, Lower Coal Measures, Low Moor, Yorkshire]. Geol. Mag., Oct. 1899, pp. 451-452.

EDGAR D. WELLBURN. YORK S.W.

Fish Fauna of the Lower Coal Measures of the Halifax District. Part I. [the fish remains are obtained from a thin layer of shale lying directly on the Hard Bed Coal; figures and describes tooth of *Diplodus gibbosus*; tooth of *Janassa* (*linguæformis*); teeth of *Helodus* sp.?; tooth of *Pleuroplax rankinei*; tooth of *Pleuroplax attheyi*; and spines of *Hoplonchus elegans* and *Acanthodes wardi*]. Halifax Naturalist, April 1899, pp. 12-14.

EDGAR D. WELLBURN. YORK S.W.

Fish Fauna of the Lower Coal Measures of the Halifax District. Part II. [a further contribution; concludes by giving a 'Tabular Summary of Fish Remains showing their Stratagraphical Distribution'; eighteen species are enumerated]. Halifax Naturalist, Aug. 1899, pp. 47-50.

W. WHITAKER AND A. J. JUKES-BROWNE. LINC. S.

The Geology of the Borders of the Wash: including Boston and Hunstanton: Explanation of Sheet 69 [embodying Lamplugh's recent observations on the Lower Cretaceous strata of the district and their correlation, with much information concerning the Gault and Red Chalk, the Lower and Middle Chalk, and the Glacial and other superficial accumulations, and with an appendix of well-sections]. Mem. Geol. Surv. Eng. and Wales, 1899, pp. vii. + 146, London; see also Geol. Mag., June 1899, pp. 274-275.

J. W. WILSON. YORK N.E., DERBYSHIRE.

Essay No. 1. | The | Existence of | Plant or Vegetable Life | as noted in the Geological Formations | especially as found in the British Isles. | By | J. W. Wilson, F.R.H.S., M.S.A. (London) | written by command | of the Faculty of Central University | Indianopolis, Ind., U.S.A. | Hull: | . . | [1899 on cover; contains brief references to Yorkshire plant-bearing beds, etc.], 35 pp.

F[LORA] WINSTONE. DERBYSHIRE.

Archeology in Derbyshire [an account of the British Archæological Association's 56th Congress, held at Buxton]. Sci. Goss., Sept. 1899, p. 103.

HENRY WOODS. YORK S.E., LINC. N.

A Monograph of the Cretaceous Lamellibranchiata of England. Part I. Nuculanidæ, Nuculidæ, Anomiidæ, and Arcidæ [including species of *Nuculana* (one new sp., *N. speetonensis*), *Nucula lamplughi*, sp. nov., from the Speeton Clay, and *Cucullæa* (*Dicranodonta*) from the Speeton Clay and from the Claxby Ironstone and Spilsby Sandstone of Donnington]. Palæontog. Soc., Vol. 53, 1899, pp. 1-72, Plates 1-14.

ARTHUR SMITH WOODWARD. YORK N.E.

On the Fossil Fishes of the Upper Lias of Whitby. Part IV. [describes remains of *Dapedius micans, Belonorhynchus acutus, B. brevirostris,* and *Gyrosteus mirabilis*]. Proc. Yorks. Geol. and Polyt. Soc., Vol. 13, Part 4, 1899, pp. 455-472.

HENRY WOODWARD. See 'T. Rupert Jones.

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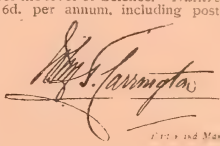

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NORTH OF ENGLAND PLANTS IN THE BICHENO HERBARIUM AT SWANSEA.

Rev. H. J. RIDDELSDELL, M.A.,
St. Michael's College, Aberdare, South Wales.

The Royal Institution of South Wales at Swansea is in possession of a collection of dried plants presented to it in 1839 by J. E. Bicheno, shortly before he left for Tasmania. The collection is unfortunately in bad condition owing to the attacks of damp and insects; and at the outset its usefulness was much lowered by the carelessness of Bicheno himself. It is by no means an infrequent thing to find specimens unnamed; very frequently, indeed, they are without date, and often either unlocalised or credited with too general a locality to be of much use. Further, there is some admixture of a second collection, presented in 1848 by 'Mr. Motley, now of Labuan,' to the same society. But Bicheno's specimens are on the whole very correctly named. There are few errors which I (with, however, a very limited knowledge) was able to trace. A specimen of *Chenopodium hybridum* from Newbury is labelled *C. rubrum,* with pencil note 'perhaps *botryodes,* not *rubrum.*' *Scleranthus annuus* var. *biennis* is put down to *S. perennis*: *Vaccinium Oxycoccos* is called *V. Vitis-idæa.*

All parts of the British Islands are laid under contribution: and there are in some genera (e.g. *Galium*) good series of foreign plants. And, moreover, contributions have been made by various well-known botanists. The initials T. F. F[orster]., J. W[oods]., W. J. H[ooker]., and others are of frequent occurrence.

The 'Naturalist' will demand some account of the North of England plants which Bicheno possessed. 'Mr. Motley, now of Labuan,' must yield place to his better known predecessor, though there is a great deal of interest to be found for North of England botanists in his collection also.

Of new records for Yorkshire I can only trace one, *Vaccinium uliginosum,* for which no precise locality is given.

Of *new* localities in West Yorkshire (if they are such)—*Meum athamanticum,* near Halifax; *Mentha rotundifolia,* Ripon; and *Polygonum viviparum,* Ingleton. It is not clear that these are not vaguer accounts of what is given more precisely in Mr. Arnold Lees' flora.

1902 November 4.

The old record of *Sedum villosum* for Ingleborough is confirmed. The Flora of West Yorkshire appears to carry it down to 1778 only. But perhaps the most interesting record is that of *Ranunculus Lingua* for Giggleswick Tarn. The Flora mentions J. Windsor's record, with the comment 'Gone—if ever there?' A specimen sent by J. Woods to Bicheno is included in this collection, identical with the ordinary form of *R. Lingua*, so far as I can see, except that the leaves of the flowering stem are decidedly stalked.

From W. J. H. come various Teesdale plants; from J. W. a number of the choice things of Craven—*Polemonium*, *Saxifraga umbrosa*, *Thalictrum minus* from Gordale, and *Ribes rubrum!* from Gordale, etc.

These specimens are, many of them, undated; but as the dated Yorkshire specimens of the collection are all 1814-1824, the same period may be taken to cover those not specified.

The complete records for the Vice-Counties of the North of England contained in Bicheno's collection are as follows:—

57. Derbyshire.

Turritis glabra. Near Matlock, 1821.

Cardamine impatiens. Matlock, 1821.

Arenaria verna. Matlock, 1821.

Lychnis Flos-cuculi. Dovedale. Young plant. Misnamed *L. viscaria.*

Helianthemum vulgare. Dovedale, 1814.

Geranium sanguineum. Matlock.

Vicia silvatica. Matlock, 1821.

'***Galium*** sp. nova Planta pubescens.' Dovedale.

Galium pusillum. Matlock.

Dipsacus pilosus. Matlock, 1821.

Campanula latifolia. Matlock.

Myosotis silvatica. Dovedale.

Empetrum. Between Chatsworth and Sheffield.

The Dovedale plants are all (except *Lychnis*) attributed to 'J. W.,' and of course are not necessarily from the Derbyshire side; the locality for *Empetrum* is more probably in Derbyshire than in Yorkshire.

The '*Galium* sp. nova' is a curious looking plant. It looks like some form of *G. erectum*, but is densely pubescent. It would probably repay critical examination at capable hands, and may be refound in its Dovedale habitat.

69. Westmorland and N. Lancs.

Thalictrum majus. Kendal, 1814.
Trollius. Ambleside.
Fumaria claviculata. Ambleside.
Stellaria nemorum. Ambleside.
Silene acaulis. Wastdale Head.
Geranium silvaticum. Near Kendal.
Prunus Padus. Haweswater.
Rubus saxatilis. Kendal.
Rosa collina. Westmorland.
Rosa villosa. Westmorland.
Rhamnus Frangula. Windermere.
Sedum anglicum. Ambleside, 1814.
Saxifraga stellaris. Westmorland, 1814.
Saxifraga aizoides. Westmorland.
Meum athamanticum. Coniston Moor.
Hieracium paludosum. Ambleside (J. W.).
Veronica hybrida. Humphrey Head.
Primula farinosa. Westmorland, 1814.
Oxyria. Westmorland, 1814.
Polypodium Phegopteris. Westmorland.
Cystopteris fragilis. Westmorland (J. W.).
Cryptogramme crispa. Westmorland, 1821.
Botrychium Lunaria. Near Asham.
Equisetum limosum. Westmorland.

70. Cumberland.

Ranunculus hirsutus. Borrodaile.
Spergula pentandra. Whitehaven. (This looks like a weak form of *S. sativa*.)
Helianthemum vulgare. Cumberland.
Rosa collina. Cumberland.
Rosa tomentosa. Keswick, 1814.
Geranium silvaticum. Cumberland.
Circæa alpina. Lodore.
Alchemilla alpina. Cumberland.
****Poterium sanguisorba.*** Cumberland.
Rubus suberectus. Cumberland (J. W.), 1814.

* Not in Watson's Top. Bot., 2nd edition.

1902 November 4.

Saxifraga hypnoides. Cumberland, 1814.

Saxifraga ajugifolia. Cumberland. (This is one of the *hypnoides* forms.)

Chrysoplenium oppositifolium. Lodore.

Rhodiola rosea. Cumberland.

Galium uliginosum. Cumberland (J. W.).

Galium boreale. Derwentwater (J. W.).

Galium pusillum. Cumberland.

Carduus heterophyllus. Borrodaile.

Apargia hispida. Bampton.

Hieracium silvaticum. Cumberland.

Hieracium ? Lawsonii. Cumberland.

Hieracium paludosa. Cumberland (J. W.).

Hieracium murorum. Wastdale (J. W.), 1815.

Pyrola secunda. Near Mr. Pocklinton's, Derwentwater, up the Gill.

Veronica officinalis. Cumberland.

Armeria maritima. Near Whitehaven.

Urtica pilulifera. Cumberland.

Aspidium dilatatum. Cumberland.

Asplenium marinum. St. Bees Head.

Lycopodium alpinum. Cumberland.

Potentilla fruticosa. Wastdale Screes, Lancs. (J. W.).

LAKES, ETC., not assignable to any one V.C.

Thalictrum alpinum. Helvelyn (J.W.).

Caltha minor. Lake Country.

Saxifraga stellaris. Helvelyn, 1821.

Parnassia. Helvelyn, 1821.

Chrysosplenium alternifolium. Helvelyn, 1814.

Lobelia Dortmanna. Lakes.

Polygonum viviparum. Helvelyn.

Salix herbacea. Helvelyn, 1814.

'LANCASHIRE.'

Sisymbrium monense.

Jasione montana.

Convolvulus Soldanella.

Lithospermum arvense.

? County.

Rhodiola rosea. On Dow Craggs.

59. Lancs. S.

Erythræa littoralis. Liverpool.

62. Yorks. N.E.

Anchusa sempervirens. Eskdale.

63. Yorks. S.W.

Meum. Near Halifax.

64. Yorks. Mid West.

Thalictrum minus. Gordale (J.W.), 1821.

Ranunculus Lingua. Giggleswick Tarn (J.W.).

Actæa. Ingleborough (J.W.).

Rosa villosa. Giggleswick.

Ribes rubrum. Gordale (J.W.).

Sedum villosum. Ingleborough.

Polemonium. Craven (J.W.).

Mentha rotundifolia. Ripon.

Polygonum viviparum. Ingleton.

65. Yorks. N.W.

Lysimachia thyrsiflora. Leckby Carr.

66. Durham.

Sagina maritima. Hartlepool.

Thlaspi alpestre. Middleton-in-Teesdale (from W. J. H.).

Potentilla fruticosa. Middleton-in-Teesdale (from W. J. H.).

Pyrola minor. Gibside Woods.

67. Northumberland S.

Dianthus deltoides. Robson, Newcastle, 1824.

Rosa tomentosa. Newcastle.

Senecio lividus. Newcastle.

Hieracium silvaticum. Newcastle.

Arbutus Uva-Ursi. 'Lightfoot's habitat. Earl Common Wood, near Hexham.'

68. Cheviotland.

Euphorbia esula. Alnwick.

Epilobium alsinifolium. Cheviot.

'Yorkshire.'

Draba incana.

Arenaria verna.

Viola lutea var. From W. J. H.

Impatiens noli-me-tangere. From J. W.

Potentilla aurea.

Geum rivale.

Rosa canina 'var. e.'

Rosa villosa.

Saxifraga umbrosa. From J. W.

Vaccinium uliginosum (a poor specimen but correctly named). New record for Yorkshire.

TEESDALE.

Cochlearia officinalis. 1821.

Saxifraga hypnoides.

Gentiana verna.

I have to thank the President and Council of the Royal Institution of South Wales for their kindness in allowing me to publish these details.

NOTE on CUMBERLAND PLANTS.

Vernacular Names of Plants (ante, p. 4).—Is there any use in chronicling these names if they are in Britten and Holland's 'Plant Names,' Dialect Society? If there is, and what are quoted below are not in Britten and Holland, then in Cumberland:—

Melilotus alba Des. is at Workington, apparently, 'Bee Flower,' 'King Clover.'

Vicia hirsuta Koch. 'Traddah,' which, according to the late W. Hodgson, A.L.S., is also applied to *V. Cracca*, and 'other tethery plants of the same order.'

Spiræa Filipendula L. *fl. pleno.* 'Lady's Ruffles' at Carlisle, according to the Rev. Hilderic Friend.

Sempervivum tectorum L. is 'Syphelt of the dalesfolk.'

These instances are taken from Hodgson's 'Flora of Cumberland,' 1898, pp. 82, 88, 95, and 126. No doubt there are more in the same book, but anyone interested had better see the volume mentioned above, i.e., Britten and Holland, and then fill the gaps; I have no access to it.—S. L. PETTY, Ulverston, 3rd January 1902.

[If possible Mr. Petty's suggestion should be acted upon, but Britten and Holland's book is not accessible to everyone. Moreover, it seems desirable that names already chronicled in that work may be recorded again, where the record extends our knowledge of the actual geographical range of the name. In fact, whenever the record tends to greater precision.—EDS. NAT.]

NOTE on LINCOLNSHIRE PLANTS.

***Juncus compressus* at Brandon, Linc. S.**—On the 17th August I unexpectedly found *Juncus compressus* Jacq. growing on the edge of a road in Brandon parish, Div. 15. Though I frequently pass that way, I had not seen it before; perhaps the very wet season may have caused it to flourish, the road having been for some months in a constant state of slush, caused by the overflowing of a pond in an adjacent field. This is a fourth record for the county.—S. C. STOW, Court Leys, Brandon, Grantham, 20th September 1902.

NORTH OF ENGLAND PLANTS IN THE MOTLEY HERBARIUM AT SWANSEA.

Rev. H. J. RIDDELSDELL, M.A.,
St. Michael's College, Aberdare, South Wales.

These notes are published by the kind permission of the President and Council of the Royal Institution of South Wales, at Swansea.

The Royal Institution of South Wales possesses a collection of dried plants, presented to it in 1848 by Mr. Motley, a resident in the locality. The specimens are in most cases carefully mounted, dated (year only), localised, and enriched with notes, some of them valuable. The notes are sometimes in Mr. Motley's own hand, sometimes in another; but apparently they always proceed from himself, either directly, or as *quotations* from leading botanists of the day. The actual annotation is never (so far as I can see) in any other reputable botanist's, e.g., Bicheno's hand. The specimens are well preserved, though they suffer somewhat from dust; but I have hopes that both Motley's and Bicheno's collections may be shortly put into a more secure condition. They are well worth preserving.

Motley's identifications are on the whole accurate, if we omit the critical genera Rubus, Rosa, and the like, which have received much attention and subdivision since his time. The worst mistakes are *Lycopodium annotinum* for *L. Selago*; *Galium anglicum* for *G. Mollugo*; *Erythræa littoralis* for *E. Centaurium*; *Trinia* for some young umbellifer which I cannot identify, but which certainly is not *Trinia*. The chief supply of plants is local, from Swansea, and the parts of Glamorgan and Carmarthen Counties adjacent; but there are some good Scotch plants, some of them supplied by Don, and a large number of North of England plants. The dates range for the most part from about 1839 to 1844, though some are given as early as 1828, others as late as 1846.

Motley was in communication with various botanists of the day, several of them men of eminence. Besides Don and Bicheno, people like Borrer and Babington, as well as T. Purslow (with Salop specimens), Miss Burton, and T. F. Forster, all had a share in building up the collection. A peculiar interest attaches to a specimen of *Epimedium alpinum*, communicated by Miss Maitland, 'gathered by Southey, near Winander Mere.'

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I subjoin a complete list of Motley's North of England plants, arranged under the heads of Watson's vice-counties, so far as exactness of designation makes it possible to do so.

59. Lancs. S.

Blysmus rufus. Bootle.

59 or 60. 'Lancashire.'

Anchusa sempervirens. 1840.

Vaccinium Vitis-idæa. Cloffa Pikes, 1840.

60. Lancs. West.

Cochlearia grœnlandica. Poulton-le-Sands, 1840.

****Geranium pyrenaicum.*** Lytham.

Trifolium arvense. Poulton-le-Sands.

Scabiosa Columbaria. Poulton-le-Sands, 1840.

Erigeron acris. Silverdale, 1839.

****Potamogeton pusillus*** var. ***compressus.*** Poulton-le-Sands, 1840.

****Isolepis fluitans.*** Poulton-le-Sands, 1840.

61. Yorkshire S.E.

Cornus sanguinea. Westwood, Beverley, 1829.

Circæa lutetiana. Beverley, 1838.

Dipsacus silvestris. Beverley, 1839.

Dipsacus pilosus. Risby, 1839.

Eupatorium cannabinum. Beverley, 1838.

Bidens cernua. Risby, 1839.

Filago germanica. Risby, 1839.

Gentiana Amarella *α.* ***autumnalis.*** Westwood, Beverley, 1839.

Scrophularia aquatica. Risby, 1839.

Mentha aquatica *β.* ***hirsuta.*** Risby, 1839.

Melissa Clinopodium. Beverley, 1839.

Lysimachia nummularia. Beverley, 1838.

Polygonum minus. Risby, 1838.

Epipactis latifolia. Risby, 1838.

Acorus Calamus. Risby, 1839.

62. Yorks. N.E.

Chelidonium majus. Clifton, near York, 1839.

Cheiranthus Cheiri. Clifford's Tower, York, 1839; St. Mary's Abbey, York, 1840.

Nasturtium officinale. York, 1840.
Nasturtium amphibium. Clifton Ings, 1839.
Cardamine amara. Clifton Ings, 1840.
Reseda luteola. Clifton Ings, 1840.
Viola palustris. Ramscliffe Wood, Scarborough.
Cerastium arvense. Clifton Scope, 1840.
Ononis arvensis α. ***spinosa.*** Clifton Scope, 1840.
Rosa spinosissima. Stockton, near York, 1838.
Montia fontana. Heworth Moor, 1840.
Petroselinum sativum. Clifford's Tower, York, 1839.
Œnanthe fistulosa. River Foss, York, 1840.
Valerianella olitoria. Clifton, 1840.
Campanula glomerata. Bishopthorpe, 1839.
Campanula rapunculoides. Manor Shore, York, 1839.
Campanula patula. St. Mary's Abbey, York, 1840.
Echium vulgare. York, 1841.
Linaria vulgaris. Clifton Ings, 1840.
Mentha aquatica α. ***nemorosa.*** Easely Bridge, York, 1840. (This is *M. sativa.*)
Polygonum Bistorta. Clifton Ings, 1840.
Sagittaria. River Foss, York, 1839.
Convallaria majalis. Scarborough.
Crocus vernus. Knavesmire, York, 1840.

63. Yorks. S.W.

Rubus Chamæmorus. Near Halifax.
Cornus suecica. Halifax.
Trientalis. Halifax, 'the most southern locality known for the plant.'
Asarum. Near Halifax.
Hypericum pulchrum. Oulton, 1840.

64. Yorks. Mid West.

Thalictrum minus. Malham, 1839.
Anemone nemorosa. Holton Ings, 1841.
Trollius europæus. Malham, 1827.
Actæa spicata. Malham.
Corydalis lutea. Fountains Hall, 1839.
Corydalis claviculata. Adel, 1841.
Cardamine pratensis. Osmondthorpe, 1841.

Cardamine pratensis var. ***acaulis.*** Osmondthorpe, 1838. This is a form with leaves all radical, and one flower on a long stalk.

Cardamine hirsuta. Adel, 1841.

Draba incana. Malham Moor, 1837.

Draba incana (dwarf). Malham Moor, 1837.

Draba muralis. Malham Cove.

Cochlearia officinalis. Gordale, 1837.

Lepidium campestre α. ***vulgatum.*** Holton, 1841.

Viola palustris. Thorner, 1840; Adel, 1841.

Viola lutea β. ***amœna.*** Malham, 1839.

Drosera rotundifolia. Adel, 1841.

Drosera rotundifolia (viviparous). Adel, 1841.

Hypericum quadratum. Halton, 1840.

Hypericum perforatum. Thorparch, 1843.

Geranium pratense. Harewood, 1839.

Geranium dissectum. Osmondthorpe, 1839.

Erodium cicutarium α. ***præcox.*** Acomb, 1840.

Dianthus deltoides. Greenhow Hill, 1839.

Silene nutans. Knaresborough.

Lychnis dioica β. ***silvestris.*** Halton, 1841.

Lychnis Flos-cuculi. Adel, 1841.

Larbræa aquatica. Thorner, 1840.

Arenaria verna. Pateley Bridge, 1839; Greenhow Hill, 1839.

Genista tinctoria. Halton, 1836.

Medicago sativa. Osmondthorpe, 1838.

Trifolium medium. Seacroft Foundry Mill, 1841.

Lotus corniculatus α. ***arvensis.*** Seacroft, 1841.

Ervum hirsutum. Osmondthorpe, 1840.

Orobus tuberosus. Templenewsam, 1840.

Adoxa. Studley, Ripon, 1841.

Saxifraga hypnoides α. ***platypetala.*** Malham, 1839.

Saxifraga umbrosa. Heseltine Gill.

Saxifraga umbrosa α. ***crenata.*** Thorparch.

Sedum acre. Brimham, 1839; Osmondthorpe, 1841.

Bryonia dioica. Bishopthorpe, 1839.

Epilobium hirsutum. Halton, 1840.

Epilobium parviflorum. Holme Bog, near Halton, 1840.

Fragaria elatior. Templenewsam, 1840.
Rubus Idæus. Templenewsam, 1840.
Rubus suberectus. Adel, 1841.
Geum rivale. Harewood, 1839; Thorner, 1841.
Potentilla Comarum. Adel, 1841.
Agrimonia eupatoria. Templenewsam, 1839.
Rosa arvensis. Osmondthorpe, 1840.
Alchemilla vulgaris. Thorner, 1841.
Pimpinella Saxifraga. Osmondthorpe, 1839.
Æthusa Cynapium. Osmondthorpe, 1840.
Conium maculatum. Osmondthorpe, 1839.
Asperula odorata. Ilkley, 1839.
Galium pusillum. Settle.
Galium verum. Halton, 1839.
Galium cruciatum. Osmondthorpe, 1840.
Hieracium paludosum. Adel, 1840.
Centaurea nigra. Osmondthorpe, 1839.
Solidago virgaurea. Hackfall, 1837.
Inula dysenterica. Kirkstall, 1841.
Chrysanthemum segetum. Scarcroft, 1839.
Achillea ptarmica. Osmondthorpe, 1839.
Achillea Millefolium. Osmondthorpe, 1839.
Antennaria dioica. Ilkley, 1838.
Erica tetralix. Brimham, 1839.
Vaccinium Myrtillus. Brimham, 1839; Ilkley, 1839; Adel, 1841.
Vaccinium Vitis-idæa. Ilkley, 1839; Adel, 1841.
Vaccinium Oxycoccos. Ilkley, 1839; Adel, 1841.
Pyrola media. Hackfall, 1839.
Campanula latifolia. Burley, 1840.
Empetrum. Ilkley, 1840.
Atropa Belladonna. Fountains, 1838.
Erythræa Centaurium. Templenewsam, 1838.
Pedicularis palustris. Adel Dam, 1839.
Pedicularis silvatica. Templenewsam, 1839.
Rhinanthus Crista-galli. Halton, 1840.
Euphrasia Odontites. Osmondthorpe, 1840.
Veronica officinalis. Halton, 1840.
Veronica Chamædrys. Studley, 1839.

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Veronica Buxbaumii. Osmondthorpe, 1838.
Pinguicula vulgaris. Ilkley, 1838; Adel, 1839.
Galeopsis Tetrahit α. parviflora. Osmondthorpe, 1841.
Galeopsis Tetrahit γ. versicolor. Osmondthorpe, 1841.
Lysimachia nemorum. Adel, 1839.
Primula veris α. officinalis. Halton Ings, 1840.
Primula veris β. elatior. Templenewsam, 1840.
Primula farinosa. Malham, 1839.
Rumex Acetosella. Adel, 1841.
Euphorbia Lathyris. Templenewsam, 1840.
Euphorbia exigua. Halton, 1840.
Polemonium. Malham.
Parietaria. Fountains Abbey, 1838.
Orchis pyramidalis. Thorparch, 1840.
Orchis latifolia. Osmondthorpe, 1840.
Gymnadenia conopsea. Barwick, 1840.
Habenaria bifolia. Ilkley, 1839; Thorner, 1840.
Ophrys apifera. Malham; Scarcroft.
Allium ursinum. Osmondthorpe, 1841.
Paris. Ilkley, 1839.
Juncus acutiflorus. Killing Beck, 1840.
Juncus lamprocarpus. Thorner, 1841.
Juncus bufonius. Osmondthorpe, 1840.
Juncus squarrosus. Adel, 1840.
Luzula Forsteri. Potternewton.
Colchicum autumnale. Barwick, 1840.
Potamogeton proteus β. heterophyllus. Ilkley, 1838.
Potamogeton natans. Osmondthorpe, 1840.
Eleocharis pauciflorus. Adel, 1841.
Eleocharis cæspitosus. Adel, 1841.
Scirpus silvaticus. Halton Beck, 1840.
Scirpus setaceus. Thorner, 1840.
Carex dioica. Adel, 1839.
Carex vulpina. Halton, 1840.
Carex paniculata. Adel, 1840.
Carex fulva. Thorner, 1840.
Carex lævigata. Adel, 1840.
Carex ampullacea. Adel, 1840.

Carex paradoxa. Near York.
Alopecurus agrestis. Halton, 1841.
Alopecurus pratensis. Osmondthorpe, 1840.
Aira caryophyllea. Adel, 1840.
Sesleria cærulea. Craven.
Briza media. Osmondthorpe, 1840; Ilkley, 1840.
Melica uniflora. Ilkley, 1840.
Dactylis glomerata. Osmondthorpe, 1840.
Cynosurus cristatus. Osmondthorpe, 1840.
Bromus racemosus. Osmondthorpe, 1840.
Bromus sterilis. Osmondthorpe, 1840.
Lolium perenne. Osmondthorpe, 1840.
Triticum repens. Osmondthorpe, 1840.
Lycopodium clavatum. Ilkley, 1839.
Lycopodium annotinum. Brimham, 1840. (This is *L. Selago.*)
Lycopodium Selago. Ilkley, 1840.
Botrychium Lunaria. Scarcroft, 1840.
Blechnum boreale. Meanwood, 1840.
Asplenium viride. Malham, 1840.
Asplenium Ruta-muraria. Thorparch, 1840.
Asplenium Filix-fœmina. Roundhay, 1841.
Aspidium spinulosum. Adel, 1841.
Aspidium spinulosum *γ.* ***dumetorum.*** Templenewsam, 1840.
Cystopteris fragilis. Malham, 1840; Skipton, 1840; Grassington, 1840.
Polypodium Dryopteris. Hackfall, 1840.
Scolopendrium vulgare. Hackfall, 1840.
Aspidium aculeatum *β.* ***lobatum.*** Hackfall, 1840.
Equisetum hiemale. Hackfall, 1840.

YORKSHIRE (61 to 65).

Draba incana.
Ribes alpinum.
Ribes petræum Sm. (*not* Wulpen).
Myosotis silvatica.

65. YORKS. N.W.

Hypericum hirsutum (marked '*montanum*'). Richmond.
Hypericum montanum. Richmond. (This is *H. hirsutum.*)
Scheuchzeria. Leckby Carr (sent by Sir W. J. Hooker).

Teesdale (65 or 66).

Avena alpina.

Tofieldia.

Gentiana verna.

66. Durham.

Hieracium succisæfolium. 1845.

Poa Parnellii.

Both from the High Force. The latter 'gathered with the specimen figured in Engl. Bot. Suppl.'

67. Northumberland S.

Senecio viscosus. North Shields.

Andromeda polifolia. Prestwick Carr.

Ruppia rostellata. Meggys Burn, 1843.

Carex irrigua. Muckle Moss.

Carex pauciflora. White Lee Syke, 1846.

69. Westmorland and N. Lancashire.

Trollius europæus. Windermere, 1828.

Epimedium alpinum. Gathered by Southey near Winander Mere.

Meconopsis. Near Winander Mere.

Helianthemum canum. Near Kendal, 1827.

Hypericum androsæmum. Windermere, 1829.

Hypericum calycinum. Windermere, 1828.

Hypericum quadratum. Windermere, 1829.

Geranium phæum. Windermere, 1829.

Impatiens noli-me-tangere. Windermere, 1829.

Staphylea pinnata. Windermere, 1829.

Spiræa salicifolia. Windermere, 1829.

Epilobium angustifolium. Windermere, 1829.

Circæa alpina. Bowness, 1838.

Chrysosplenium alternifolium. Windermere, 1829.

Saxifraga granulata. Windermere.

Ribes petræum Sm. Windermere, 1840.

Sedum Telephium. Ambleside.

Sedum villosum. Westmorland.

Peucedanum Ostruthium. Legberthwaite, 1844.

Lathræa squamaria. Windermere, 1829.

Euphorbia cyparissias. Windermere, 1828.

Euphorbia amygdaloides. Cartmell, 1840.

Polygonum Bistorta. Ambleside.

Aristolochia. Windermere, 1828.

Daphne Mezereum. Windermere, 1829.

Taxus baccata. Windermere, 1829.

Epipactis palustris. Windermere, 1828.

Listera nidus-avis. Windermere, 1829.

Allium carinatum. Windermere.

Aspidium spinulosum δ. ***rigidum.*** Ulverston.

Hymenophyllum Wilsoni. Stock Gill Force.

Lycopodium alpinum. Helm Crag, Grasmere.

70. CUMBERLAND.

Arenaria rubra α. ***campestris.*** Flimby, 1829.

Geranium sanguineum. Flimby, 1829.

Ervum hirsutum. Flimby, 1829.

Saxifraga stellaris. Skiddaw, 1841.

Aster Tripolium α. ***radiata.*** Flimby, 1840.

Rumex alpinus. Mungrisedale.

Juncus filiformis. Meadow at Thirlmere, 1844.

Scirpus setaceus. Flimby.

Eriophorum gracile Smith. 'I hold these three, *gracile* Sm., *angustifolium* and *polystachyon,* to be of one species, *E. polystachyon* Linn. Should *E. gracile* Sm. be separated, it must bear Gaudin's name, *oligostachyon.* Gaudin, however, gives it as a var., but with an expression of doubt whether it ought not to be separated.'

Cryptogramme crispa. Keswick.

NOTE on YORKSHIRE GEOLOGY.

Perthshire Rocks in East Yorkshire. In the Tenth Report of the Yorkshire Boulder Committee, published in 'The Naturalist' for February 1897, Mr. H. B. Muff, B.Sc., F.G.S., and the writer recorded a number of rocks, some of which could not at the time be definitely localised. Since then Mr. Muff's appointment on the Geological Survey has brought him into contact with Scottish geology and Scottish geologists. To two of these latter (Messrs. B. N. Peach, F.R.S., etc., and E. H. Cunningham-Craig, B.A., F.G.S.) he submitted several of the Robin Hood's Bay boulders. These gentlemen have identified some undoubted Perthshire rocks amongst the specimens, and it is interesting to note that they were principally obtained from the Upper Boulder clay, which yields such a large proportion of Cheviot rocks. Details of the boulders will appear in the next report of the Yorkshire Boulder Committee. Mr. Muff has kindly presented the specimens to the Hull Museum, where they can be at any time referred to.
T. SHEPPARD, F.G.S., Museum, Hull, 16th August 1902.

NOTE on YORKSHIRE PLANTS.

***Sagina ciliata* near Leeds.**—Somebody may have already noted the occurrence of this pearlwort—*Sagina ciliata* (Fr.)—in Alwoodley Lane; but, even if that be so, it seems worthy of mention (rare as the plant is in the West Riding) that it was there this summer in some abundance and quite finely grown. Whilst cycling along the lane last month I noticed it fringing the base of a sandy wayside bank, and dismounted in the hope of gathering *S. apetala*. The concealed fruit with its closely-fitting calyx, however, soon put an end to that idea; and when a lens revealed the mucronate points on two of the four sepals I concluded that it must be *S. ciliata*. The plants in mass were of a beautiful, almost translucent green, and many of them somewhat exceeded six inches in height.—A. E. Bradley, Leeds, 1st October 1902.

NOTES on LAKELAND PLANTS.

***Menyanthes trifoliata* at an Unusually High Elevation.**—In July last, whilst botanising in the neighbourhood of Borrowdale, Cumberland, I found the Bogbean (*Menyanthes trifoliata*) in pools near the summit of Glaramara, and flowering freely, at an altitude of about 2,350 feet.—Albert Wilson, 4, Eaton Road, Ilkley, 13th October 1902.

***Peucedanum sativum* in Cumberland.**—This plant, which is not in Mr. Hodgson's 'Flora of Cumberland,' I found in October of this year (1902) at Silloth. There was quite a large patch of it on the embankment of the single rail that runs through the sandhills to the gun trial yard on the shore. —S. Armitt, Rydal Cottage, Ambleside, 25th October 1902.

Aliens in Cumberland.—At Silloth this October (1902) I found two interesting foreign plants apparently quite at home on the sandhills: *Solanum rostratum,* which had been seen previously by Miss E. J. Glaister, of Skinburness, but not recorded, and *Solanum triflorum,* which was in flower and making good fruit.—S. Armitt, Rydal Cottage, Ambleside, 25th October 1902.

Heather on Humphrey Head.—On 27th September I paid a visit to Humphrey Head in Morecambe Bay, North Lancashire. The day was warm and calm, the tide was out and showed no symptoms of return, the sands were firm, and an air of peacefulness (enhanced by the spectacle of numerous gulls reposing on the waste) contrasted most forcibly with the savage ruggedness of the mountain valley I had left two days before. Walking towards the Head I observed the limestone rocks charged with fossils that flanked the shore, then having mounted the grassy summit, my attention was immediately directed to some tufts of tiny, low-crouched diminutive Heather that struggled to peer above the stunted, sheep-cropped grass. Wretched, indeed, was the plight of the heather, so utterly different from the splendid 'three-feeters' conspicuous on the summit of Hawkshead Moor on the previous day. Heather in a limestone district, and on soil perched on a foundation of briskly effervescing lime! It was rather a surprise. So, having secured a small quantity of the heath-clad soil, I examined it analytically on my return hither. The soil (which was acid to test-paper) was dried, passed through a 30-mesh sieve, etc., and extracted with boiling aqua regia. No effervescence whatever. The acid extracted only 9 per cent. of its weight, and left behind a brown mass of very fine granules of sand. The 9 per cent. included 4 oxide of iron, 2·9 alumina, 0·3 lime (CaO), leaving 1·8 of other constituents. That was enough; the wretched poverty in lime triumphantly explained the presence of this eminently calcifugous plant on the grassy waste of Humphrey Head, but I leave to those afflicted with 'distribution on the brain' to account for its passage across the limestone tract of the Cartmel district from the, say, Upper Silurians in the neighbourhood.—P. Q. Keegan, Patterdale, 3rd Oct. 1902.

OCCURRENCE OF THE LITTLE BUNTING AT TEES MOUTH, CO. DURHAM:

AN ADDITION TO THE NORTH COUNTRY AVI-FAUNA.

C. E. MILBURN,

105, Grange Road E., Middlesbrough.

On 11th October 1902, while Mr. C. Braithwaite, of Seaton Carew, and I were 'working' the Tees mouth on the Durham side of the river, a small bird rose at our feet out of the long grass which grows upon the inner sea wall, and at once drew our attention by its diminutive size. It settled on a piece of slag, and, upon being followed up, rose, and, uttering a 'tick-tick-tick' call which was strange to us, settled between the inner and outer sea wall, where it was shot by my companion.

On close examination we came to the conclusion that the bird was probably the Little Bunting, but, to make assurance doubly sure, it was forwarded to the South Kensington Museum, and was identified by Mr. Ogilvie Grant as being *Emberiza pusilla* Pall.

The specimen is a female (by dissection), and was exhibited at a meeting of the B.O. Club on 22nd October on behalf of its present owner.

As this is the first example which has occurred in the North of England, so far as is known, and only the second recorded specimen for the British Isles, the above record will no doubt be of great interest to north country ornithologists.

The easterly winds which brought the above bird over caused the arrival of a good number of regular immigrants, as on the above date we noted three Shore Larks (*Otocorys alpestris*), a pair of old Snow Buntings (*Plectrophenax nivalis*), single Great Grey Shrike (*Lanius excubitor*), and Hooded Crow (*Corone cornix*), besides the Thrushes, Redwings, Redbreasts, Rock Pipits, Larks, etc., during our usual week-end ramble.

NOTE on LINCOLNSHIRE BIRDS.

Early Migration of Wild Geese near Horncastle.—Last evening (Friday, 12th September) I was walking in my fields when I was surprised to hear the cackling of Wild Geese, and, looking up, I counted eight passing over me, probably from the Wash to the Trent. There was a very cold east wind, but I have never seen them so early in the season.—J. Conway Walter, Langton Rectory, Horncastle, 13th September 1902.

NOTES on YORKSHIRE BIRDS.

Honey Buzzards near Driffield.—A fine Honey Kite (*Pernis apivorus* L.) was shot about five weeks ago at Elmswell, near Driffield. It is a female, in splendid condition and plumage, the violet sheen on the plumage being very marked. The wings are 4 feet 2 inches from tip to tip. It has been stuffed, and is in one of the shops in Driffield on exhibition. Last week what was supposed to be its mate was shot either at Ruston Parva or Rudstone, both in the neighbourhood of Driffield.—E. Percy Blackburn, Driffield, 8th August 1902.

Autumn Bird-notes from Spurn.—An old male Snow Bunting (*Plectrophenax nivalis*) was seen here 12th September. This is an early date.

A Curlew Sandpiper (*Ancylochilus subarquatus*) killed by flying against the telegraph wire at Spurn, 28th September.

A female Fulmar (*Fulmarus glacialis*) was caught by some lads here on 29th September, near the fishing boats.

On 6th October a good many Goldcrests (*Regulus regulus*) about here and since. A good many Ring Ouzels (*Merula torquata*) were about last week and a Woodcock (*Scolopax rusticola*).—Philip W. Loten, Easington, Spurn, 14th October 1902.

Abundance of Magpies in the Huddersfield District.—I shall be interested to know if any of our ornithological readers experienced a large increase in the number of Magpies (*Pica pica*) in their districts during the past season. Here I never knew them so much in evidence, and we have seldom been without them in the garden—in the summer often four or five at a time—all through the year. None actually nested in the garden, but one pair built in a tree just outside. A little further on were two other nests, and altogether I think there were quite ten nests within several hundred yards on different sides of this house and grounds. The effect on the smaller birds breeding in the garden was disastrous, for many which built even but a short distance from the house had their eggs promptly eaten by the beautiful but ravenous Magpies, which even sucked the ducks' eggs on the pond sides. An unusual number of the smaller birds, however, doubtless directly from the self-preservation instinct, did build near the house, and four or five pairs of Thrushes and Blackbirds in the ivy actually growing on it ; one pair of Thrushes close to one of the doors where people were constantly going in and out. Another pair built, and got their young safely away, *inside* the greenhouse. The birds went in and out through a broken pane of glass, the orifice of which was so small and narrow I often wondered they were not injured by the sharp edges ; whilst still another pair for safety built under a narrow wood footbridge, which was on a level with the garden path, and where almost everyone coming into or going out of the garden necessarily walked over the nest. In this and nearly all the other cases, the young birds got safely away. It was no doubt, too, on account of the Magpies that this year we had scarcely any Missel Thrushes' nests. These birds usually build in such exposed spots, they would have been found by the Magpies at once. The previous year an unusually large number of Missel Thrushes bred in the garden.—Geo. T. Porritt, Crosland Hall, near Huddersfield, 10th October 1902.

NORTHERN NOTES and NEWS.

The August 'Windsor Magazine' contains an interesting article on 'Land Won from the Sea,' by Beckles Willson and H. Goulding. This is accompanied by plans of Sunk Island, Hatfield Chase, etc.

Yorkshire botanists will be glad to hear that Mr. George Massee, of Kew, has prepared a work, 'European Fungus-Flora,' which includes 1,553 British species, which was lately published by Messrs. Duckworth & Co.

FUNGUS FORAY AT EGTON BRIDGE AND ARNCLIFFE WOODS, NEAR WHITBY.

CHARLES CROSSLAND, F.L.S.,

Halifax; *Hon. Sec. Yorkshire Mycological Committee.*

THE 169th Meeting consisted of a Fungus Foray, the thirteenth of its kind (the eleventh annual) organised by the Union. It was held at Egton Bridge, near Whitby, 27th September to 2nd October, under the direct management of the Mycological Committee. Its object was the investigation of Arncliffe Woods and other portions of the romantic valley of Eskdale, a charming and fairly well-wooded district. The centre of operations was at Egton Villa, a most comfortable and in every way convenient house, which the Union Secretaries had succeeded in securing beforehand, typical headquarters where all could be accommodated under one roof, and where all assembled on the Saturday.

There were present Messrs. G. Massee, F.L.S., V.M.H. of the Royal Herbarium, Kew (President of the Committee); W. N. Cheesman, Selby; A. Clarke, Huddersfield; J. Wms. Sutcliffe, Halifax; J. Needham, Hebden Bridge; J. H. Holland, F.L.S., and A. D. Cotton, London; C. H. Broadhead, Thongsbridge; R. H. Philip, Hull; and C. Crossland, Hon. Sec. Mr. T. Birks, Yarm-on-Tees, was unable to stay beyond the first day. Messrs. W. T. H. Wager, Derby, and Thos. Gibbs, Sheffield, wrote expressing regret at being unable to take part in the foray, and wishing it success.

Consignments of fungi were received from Bramhope, Dewsbury, and Holmfirth.

The opening day was very successful; it established a record both as to numbers met with in one day and new finds. Less than a mile was covered in pastures and woods in the vicinity of Egton Lodge, and in the evening it was found that close upon 200 species had been met with. One, growing among moss on a semi-submerged boulder in the stream, proved to be new; it belongs to the Discomycetes, and is quite distinct from any hitherto-described species. It will be known as *Coryne aquatica*, and a full description will be given in 'The Naturalist' in due course. Among many other uncommon things met with was *Coprinus Bresadolæ* Schultz in the corner of a wood, and new to

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Britain; it is a near relative of *C. atramentarius*. It is very seldom pasture species are met with in such variety within a small area as they were on this occasion. There were no less than twelve species of *Hygrophorus* and five of *Clavaria*. Among the former was *H. bicolor* Karst., noticed for the first time in Britain; it is distinguished from *H. pratensis* by its chalk-white, gradually downward-tapering stem. The beautiful pink-white *H. calyptræformis* was also among the number.

A splendid group of *Badhamia utricularia* rewarded the lifting of a decaying branch from the floor of the wood; the iridescent sporophores of this elegant Myxomycete hang in grape-like clusters on a slender stalk from the under surface of the matrix upon which it has been feeding and multiplying.

The first portion of the second day was given to Limber Wood, and a pasture or two on the left bank of the Esk, between Egton Bridge and Glaisdale. A fine example of *Tricholoma sævum* Gillet was picked up in one of the pastures; the second British record. It is rather remarkable that the same species should be sent to the meeting by Mr. Thomas Whitham from Bramhope. Limber Woods, with their eastern aspect, were rather barren of fungi. The Esk was crossed by the Beggars' Bridge, Glaisdale, and presently the basket containing the lunch was unpacked at a very opportune wayside inn. After full justice had been done to the good things 'put up' by the hostess of Esk Villa, no time was lost in making for the adjoining Arncliffe Woods. These, owing to moisture and shade, were more prolific than Limber. A quantity of well-grown plump *Hydnum repandum* was noticed growing in a segment of a circle. Among other things gathered were *Clitocybe obsoleta*, *Leptonia chalybea*, *Pholiota flammans*, *Lactarius pergamenus*, and *Inocybe Godeyi* Gillet; the latter adds another new British record.

On the Wednesday a visit was paid to Mulgrave Woods, and many additions made to the records of 1894 and 1900, among them being *Marasmius Vaillantii*, *Leptonia formosa*, *Pholiota adiposa*, *Polyporus cæsius*, and *Puccinia carices* on *Carex pendula*, a host for this species not given in Plowright's British Uredineæ.

Each morning, before starting on the day's excursion, short runs out in the immediate neighbourhood of the headquarters were made by several of the members, while others worked at the previous day's finds left overnight undetermined. Mr. A. Clarke took photographs of several species of especial interest. While odd genera were fairly well represented, many common species were almost nil. For instance, only a solitary specimen

of *Armillaria mellea* was seen. There were no great troops of anything, but, what was perhaps better, a varied sprinkling of species. The tough, fleshy fungi which find favour with special beetles were marked by their absence; this was disappointing, as a worthy coleopterist connected with the Union had expressed a wish that some should be sent him. The absence of weight of fungi was set down to the abnormally low temperature which prevailed in July and August.

Notwithstanding weather drawbacks, this foray, in point of new and important discoveries, has been the most successful of recent years. In addition to the new species already referred to, others are under consideration, and quite a number have been added to the already long list of Yorkshire fungi. The wide experience and knowledge of fungi possessed by the President, who has a thorough grasp of the whole subject, has been the great factor in bringing about these good results. His recently published book on European Agaricaceæ proved exceedingly useful. It is a valuable addition to the literature dealing with systematic British Mycology. Its pages show at a glance which species had been met with in this country up to the date of its publication and which had not. All the necessary books and microscopes were brought to the meeting. Mr. A. Clarke brought a number of new stereo-photographs of fungi, and the writer a few recent water-colour drawings of micro species.

Mycology generally appears to be creating a wider interest than formerly, both from a systematic and economic standpoint. There is plenty of scope, the field being wide and the workers few.

The Committee, through the Union, is much indebted to the Messrs. J. and A. B. Foster for granting the free run of their extensive Egton estates. A very intelligent and most useful local guide was also provided. Three hundred and forty species were collected.

Papers bearing the following titles were read:—'The Modern Method of Studying Agarics,' by the President, illustrated by large diagrams; 'The Economic Uses of Fungi,' by Mr. J. H. Holland, F.L.S., of the Kew Museum, illustrated by diagrams and specimens; 'The Use of Photography in connection with the Study of Fungi,' by Mr. A. Clarke, illustrated by numerous beautiful stereo and other photographs. Abstracts of each of the papers will appear in a future issue.

At the business meeting, held on the Wednesday evening, Mr. G. Massee was elected President of the Mycological Com-

mittee for the ensuing year. It was decided to recommend Helmsley for next year's foray, commencing 26th September.

In the list of species found the sequence of the groups and genera is that followed by Professor Saccardo in his 'Tabulæ Comparativæ Generum Fungorum Omnium,' with a few slight exceptions.

The abbreviations of the names of places where the specimens were found are :—E.B. = Egton Bridge ; L.W. = Limber Wood ; A.W. = Arncliffe Woods ; M. = Mulgrave Woods.

All names of species previously recorded in 'The Naturalist' for Mulgrave Woods are here omitted. The 1894 foray was not published.

BASIDIOMYCETÆ.

(GASTROMYCETÆ.)

NIDULARIACEÆ.

Cyathus Haller.
C. striatus Hoffm. M.
Sphærobolus Tode.
S. stellatus Tode. M.
On rotting wood.

LYCOPERDIACEÆ.

Geaster Micheli.
G. hygrometricus Pers. E.B.
Among grass in hill-side pasture.
Lycoperdon Tournf.
L. Hoyleii Berk. E.B.
Among grass in open wood.
L. gemmatum Batsch. E.B.
In pasture.
L. pyriforme Schæff. E.B.
In hill-side pasture.
Bovista Dill.
B. plumbea Pers. E.B.
In hill-side pasture.

SCLERODERMACEÆ.

Scleroderma Pers.
S. vulgare Fr. A.W.

PHALLACEÆ.

Ithyphallus Fr.
I. impudicus L. E.B.
In open wood.
Mutinus Fr.
M. caninus Fr. E.B.
Among moss in woodland.

(HYMENOMYCETÆ.)

AGARICACEÆ.

Agariceæ.

Leucosporeæ.

Amanita Pers.
A. muscaria (L.). L.W.
A. pantherina (DC.). E.B.
A. rubescens Fr. E.B.
Amanitopsis Roze.
A. vaginatus (Bull.). E.B.
Lepiota Fr.
L. procera (Scop.). L.W.
L. naucina Fr. E.B.
L. carcharia (Pers.). E.B.
In hill-side pasture.
L. granulosa (Batsch). E.B.
In open wood.
Armillaria Fr.
A. mellea (Vahl). L.W.
The mycelium only, on stump.
Tricholoma Fr.
T. spermaticum Fr. L.W.
On the ground.
T. stans Fr. L.W.
T. rutilans (Schæff.). L.W.
About decaying stump.
T. album (Schæff.). E.B.
T. sævum Gillet. E.B.
In pasture near.
T. grammopodium (Bull.). L.W.
T. sordidum Fr. E.B., L.W.
Clitocybe Fr.
C. nebularis (Batsch). M.
On the ground.
C. phyllophila Fr. A.W.
Among dead beech-leaves.

C. infundibuliformis (Schæff.). E.B.
C. obsoletus (Batsch). A.W.
C. fragrans (Sow.). E.B.
C. laccata (Scop.) (=Laccaria laccata B.&Br.). E.B.
In open wood.

Collybia Fr.
C. radicata (Bull.). E.B.
C. platyphylla Fr. L.W.
Among dead leaves.
C. butyracea (Bull.). E.B.
C. velutipes (Curt.). M.
C. confluens (Pers.). E.B.
C. dryophila (Bull.). E.B.
Among dead leaves.

Mycena Fr.
M. pura (Pers.). E.B.
Among grass, wood-side.
M. gypsea Fr. E.B.
Among grass.
M. rugosa Fr. E.B.
On rotting stump.
M. galericulata (Scop.). E.B.
On dead stump.
M. polygramma (Bull.). E.B.
On dead stump.
M. alcalina Fr. E.B.
On decaying wood.
M. stanea Fr.
On the ground among grass.
M. filopes (Bull.). E.B.
M. hæmatopoda (Pers.). E.B.
On decaying branches.
M. sanguinolenta Fr. E.B.
On decaying leaves.
M. tenerrima B. E.B.
M. corticola (Schum.). E.B.

Omphalia Fr.
O. fibula (Bull.). E.B.
Among moss.
Var. Swartzii Fr. L.W.

Pleurotus Fr.
P. chioneus (Pers.). E.B.
On dead twigs.

Rhodosporeæ.

Entoloma Fr.
E. jubatum Fr. E.B.
E. sericeum (Bull.). E.B.
In pasture.
E. nidorosum Fr. A.W.
Among grass.

Clitopilus Fr.
C. prunulus (Scop.). M.
C. stilbocephalus (Berk.). E.B.

Leptonia Fr.
L. solstitialis Fr. E.B.
In hill-side pasture.
L. chalybea (Pers.). A.W.
L. formosa Fr. M.

Nolanea Fr.
N. pascua (Pers.). E.B.

Ochrosporeæ.

Pholiota Fr.
P. ægerita Fr. E.B.
P. adiposa Fr. M.
Under decaying tree trunk.
P. flammans Fr. A.W.
On new stump.
P. mutabilis (Schæff.). E.B.
On decaying stump.

Inocybe Fr.
I. Godeyi Gillett. A.W.
I. rimosa (Bull.). E.B., A.W.
I. Clarkii (B.&Br.). A.W.
I. geophylla (Sow.). A.W.

Hebeloma Fr.
H. glutinosum (Lind.). E.B.
H. punctatum Fr. E.B.

Flammula Fr.
F. spumosa Fr. E.B.

Naucoria Fr.
N. melinoides Fr. E.B.
N. temulenta Fr. E.B.
N. sobria Fr. L.W.
N. conspersa Fr. E.B.
N. carpophila Fr. E.B.

Galera Fr.
G. tenera (Schæff.). E.B.
G. hypnorum (Batsch). E.B.

Tubaria Fr.
T. furfuracea (Pers.). E.B.

Crepidotus Fr.
C. mollis (Schæff.). E.B.
On dead trunk.
C. applanatus (Pers.). E.B.
On fallen branch.

Bolbitius Fr.
B. flavidus (Schæff.). L.W.
B. titubans Fr. E.B.
In meadow.

Cortinarius Pers.
C. (Phleg.) varius Schæff. E.B.

C. (Derm.) sanguineus Fr. A.W.
C. (Hygr.) dolobratus Fr. E.B.
C. (Hygr.) leucopus Bull. E.B.
C. (Hygr.) acutus Pers. L.W.

Melanosporeæ.

Agaricus L.
A. arvensis Schæff. E.B.
A. campestris L. E.B.
A. comptulus Fr. E.B.
Stropharia Fr.
S. albocyanea (Desm.). E.B.
S. stercoraria Fr. E.B.
S. semiglobata (Batsch). E.B.
Hypholoma Fr.
H. sublateritium (Schæff.).
On stump. E.B., L.W.
H. elæodes Fr. L.W.
On stump.
H. fasciculare (Huds.). E.B.
On stump.
H. velutinum (Pers.). L.W.
On the ground.
H. Candolleanum Fr. M.
On stump.
Panæolus Fr.
P. leucophanes B.&Br. E.B.
P. phalænarum Fr. E.B.
P. campanulatus L. E.B.
P. papilionaceus Bull. E.B.
All on decayed dung in pastures.
Anellaria Karst.
A. seperata (L.). E.B.
A. fimiputris Karst. E.B.
Both on cow dung.
Psilocybe Fr.
P. sarcocephala Fr. A.W.
P. semilanceata Fr. E.B., A.W.
Var. cœrulescens C. E.B.
P. spadicea Fr.
Var. polycephala Fr. A.W.
P. fœnisecii Pers. E.B.
Psathyra Fr.
P. conopilea Fr. E.B.
Among grass.
P. obtusata Fr. E.B.
Psathyrella Fr.
P. gracilis Fr. E.B.
P. disseminata (Pers.). E.B.
About old stump.
P. atomata Fr. E.B.
Roadsides, among grass.
Coprinus Pers.
C. atramentarius Fr. A.W.
On decayed stump.
C. Bresadolæ Schultz. E.B.
On the ground among rotten branches in a wood.
C. niveus Pers. E.B.
On decayed cow dung.
C. micaceus Bull. E.B.
On decaying stump.
C. radiatus (Bolton). E.B.
On horse dung among tall grass.
C. plicatilis Curt. E.B.
Among grass.
C. hemerobius Fr. E.B.
Gomphidius Fr.
G. gracilis Berk. E.B.
Among grass.

Paxilleæ.

Hygrophorus Fr.
H. eburneus Bull. M.
H. pratensis Fr. E.B.
H. bicolor Karst. E.B.
H. virgineus Wulf. E.B.
H. niveus Fr. E.B.
H. lætus Fr. (=H. Houghtoni B.). E.B.
H. vitellinus Fr. E.B.
H. ceraceus Wulf. E.B.
H. turundus Fr. A.W.
H. puniceus Fr. E.B.
H. obrusseus Fr. E.B.
H. calyptræformis B. E.B.
H. psittacinus Schæff. E.B.
H. unguinosus Fr. E.B.
H. nitratus Pers. M.
All the Egton Bridge Hygrophori were in the pastures about Egton Lodge.
Paxillus Fr.
P. involutus Fr. E.B.
P. paradoxus Cke. E.B.
On sandy ground, stream side.

Lactarieæ.

Lactarius Pers.
L. torminosus (Schæff.). M.
L. pyrogalus (Bull.). E.B.
L. piperatus (Scop.). E.B.
L. pergamenus Fr. A.W.

L. pallidus (Pers.). M.
L. quietus Fr. E.B.
L. glyciosmus Fr. E.B.
L. fuliginosus Fr. E.B.
L. picinus Fr. A.W.
L. volemus Fr. E.B.
L. subtomentosus Lind. A.W.
All in the woodlands and on the borders of adjoining fields.

Russula Pers.
R. nigricans Bull. E.B.
R. adusta Pers. E.B.
R. mustelina Fr. L.W.
R. cutefracta Cke. M.
R. rubra DC. A.W., E.B.
R. vesca Fr. A.W.
R. azurea Bresad. E.B.
R. cyanoxantha Schæff. E.B.
R. fellea Fr. E.B.
R. ochroleuca Pers. E.B.
R. granulosa Cke. A.W.
R. fragilis Pers. E.B.
R. lutea Huds. A.W.
All in and about the woods.

Cantharelleæ.

Cantharellus Pers.
C. aurantiacus Fr. A.W.

Marasmieæ.

Marasmius Fr.
M. peronatus (Bolton). E.B.
M. oreades (Bolton). E.B.
In rings in pastures.
M. erythropus Fr. E.B.
M. Vaillantii Fr. M.
M. amadelphus Fr. E.B.
M. candida (Bolton). E.B.
M. rotula Scop. E.B.
M. androsaceus L. E.B.
M. Hudsoni Pers. E.B.
Under holly bushes on the fallen leaves.

Lentinus Fr.
L. cochleatus Fr. M.
On old stump.

POLYPORACEÆ.

Boleteæ.

Boletus Dill.
B. luteus L. E.B.
B. elegans Schum. E.B.
B. chrysenteron Fr. E.B.
B. badius L. A.W.
B. scaber Fr. E.B.
On the ground among grass in and near the woods.

Polyporeæ.

Polyporus Mich.
P. squamosus Fr. E.B.
On stump.
P. Rostkovii Fr. E.B.
On decaying stump.
P. giganteus Fr. E.B.
On decaying stump, almost overgrown by moss and grass.
P. sulphureus Fr. A.W.
P. cæsius Fr. M.
P. fragilis Fr. E.B.
On decaying fir wood.

Fomes Fr.
F. fomentarius Fr. E.B.
On stump.
F. annosus Fr. E.B.
On new stump.
F. applanatus (Wallr.). E.B.
On base of trunk.
F. ferruginosus Fr. E.B.

Polystictus Fr.
P. versicolor Fr. E.B., etc.
Common on dead stumps.
P. abietinus Fr. A.W.
On decaying fir wood.

Poria Pers.
P. vaporaria Fr. E.B., L.W., A.W.
On fallen branches, etc.
P. blepharistoma B.&Br. E.B.
On dead twigs.
P. mucida Fr. M.
P. terrestris Fr. E.B., L.W.
On damp, shaded ground.

Dædalea Pers.
D. unicolor Fr. M.
On dead log.
D. quercina Pers. E.B.
On oak stumps.

HYDNACEÆ.

Hydnum L.
H. repandum L.
On the ground, Arncliffe Wood. Fine specimens growing in the segment of a circle.

Grandinia Fr.
G. granulosa Fr. E.B.
On decaying wood.

CLAVARIACEÆ.

Clavaria Vaill.
C. fastigiata L. E.B.
C. cinerea Bull. L.W.
C. cristata Holmsk. L.W.
C. fusiformis Sow. A.W., E.B.
C. inæqualis Fl.Dan. E.B.
C. vermicularis Scop. E.B.
C. fumosa Pers. E.B.
All in pastures except C. cinerea and C. cristata, which were found in Limber Wood.
Typhula Pers.
T. pusilla Schrœt. A.W.
On decaying leaves.

THELEPHORACEÆ.

Thelephoreæ.

Stereum Pers.
S. hirsutum Fr. E.B.
S. purpureum Pers. E.B.
S. rugosum Fr. E.B.
All on dead wood.
Corticium Fr.
C. sebaceum (Berk.). E.B.
C. arachnoideum Berk. A.W.
C. roseolum Mass. L.W.
On decaying rail.
C. comedens Fr. E.B.
On cortex of hazel branch.
Hymenochæte Lév.
H. tabacina Lév. M.
On fallen trunk.
Cyphella Fr.
C. capula Fr. E.B.
On dead herbaceous stems.
Peniophora Cooke.
P. cinerea Cke. E.B.
Coniophora DC.
C. arida Karst. L.W.

TREMELLACEÆ.

Auricularieæ.

Hirneola Fries.
H. auricula-judæ Berk. E.B.
On living branches of Sambucus nigra.

Tremelleæ.

Exidia Fr.
E. albida Brefeld. E.B.
Tremella Dill.
T. mesenterica Retz. M.

Dacryomyceteæ.

Dacryomyces Nees.
D. chrysocomus Fr. E.B.
On decayed wood.

Protoclavarieæ.

Calocera Fr.
C. viscosa Fr. E.B.
C. cornea Fr. E.B.
Both on dead stump.

UREDINACEÆ.

Melampsoreæ.

Melampsora Cast.
M. betulina (Pers.). L.W.
On Betula alba leaves.
M. circeæ (Schum.). L.W.
On leaves of Circæa lutetiana.
Coleosporium Lév.
C. senecionis (Pers.). E.B.
On Senecio vulgaris.
C. sonchi (Pers.). E.B.
On Petasites vulgaris.

Puccineæ.

Uromyces Link.
U. fabæ (Pers.). M.
On Faba vulgaris.
U. valerianæ (Schum.). E.B.
On Valeriana officinalis.
Puccinia Pers.
P. violæ (Schum.). E.B.
P. menthæ Pers. E.B.
On Mentha aquatica.
P. rubigo-vera (DC.). E.B.
P. poarum Niel. E.B.
P. suaveolens (Pers.). E.B.
On Carduus arvensis.
P. caricis (Schum.). M.
On leaves of Carex pendula.
P. hieracii (Schum.). E.B.
P. centaureæ Mart. E.B.
On Centaurea nigra.
P. taraxaci Plow. E.B.
On Taraxacum officinale.
P. polygoni Pers. E.B.
On Polygonum amphibium.

P. oblongata (Link.). E.B.
On Luzula maxima.
P. lychnidearum Link. E.B.
On Lychnis diurna.
P. veronicæ (Schum.). E.B.
On Veronica montana.
P. glechomatis DC. M.
On Nepeta glechoma.
Phragmidium Link.
P. violaceum (Schultz.). E.B.
P. rubi (Pers.). E.B.
Both on Rubus.
P. subcorticatum (Schrank). E.B.
On leaves and stems of Rosa.

ASCOMYCETÆ.

(*PYRENOMYCETÆ.*)

PERISPORIACEÆ.

Erysipheæ.

Sphærotheca Lév.
S. pannosa Lév. E.B.
Oidium stage, on Rosa.
S. Castagnei Lév. E.B.
On peas in garden.
Erysiphe Hedw.
E. polygoni DC. E.B.
On Heracleum sphondylium and Anthriscus sylvestris.
E. cichoracearum DC. L.W.
On Arctium.

SPHÆRIACEÆ.

Sphærelleæ.

Sphærella C.&D.
S. fragariastri Tul. E.B.
On cultivated strawberry plants, garden, Esk Villa.
S. rumicis Desm. E.B.
On Rumex obtusifolia.
S. hederæ Sow. E.B.

XYLARIACEÆ.

Hypoxylon Bull.
H. rubiginosum Fr. E.B.
Xylaria L.
X. hypoxylon L. E.B., L.W., A.W.

VALSACEÆ.

Eutypa Tul.
*E. lata Tul. E.B.

DOTHIDEACEÆ.

Phyllachora Fckl.
P. graminis Fckl. E.B.
On grass stems.

HYPOCREACEÆ.

Nectria Fr.
N. cinnabarina Fr. E.B.
Mostly in the conidial stage on fallen branches.
Hypomyces Fr.
H. chrysospermus Tul. E.B.
On decaying Boletus.

HYSTERIACEÆ.

Lophodermium Chev.
L. pinastri (Schrad.). L.W.
On leaves of Scotch Fir.
Dichæna Fr.
D. quercina (Pers.). E.B.
On dead oak wood.

(*DISCOMYCETÆ.*)

HELVELLACEÆ.

Helvella L.
H. ephippium Lév. M.
On the ground.

PEZIZACEÆ.

Peziza Dill.
P. sepiatra Cke. E.B.
On road scrapings.
P. succosa Berk.
(=Galactinia succosa Sacc., Syll. VIII., n. 397). M.
Humaria Fr.
H. melaloma (Fckl.) Mass. E.B.
H. granulata (Bull.) Sacc. E.B.
On cow dung in fields.
H. violacea (Pers.) Sacc. E.B.
On charred ground.
H. Oocardii (Kalch.) Sacc. L.W.
On decaying thorn wood in swamp.
Lachnea Fr.
L. coprinaria (Cke.) Phil. E.B.
On cow dung in field.
L. scutellata (L.) Gill. A.W.
On decaying moist wood and on bare ground.

L. umbrorum (Cke.) Gill. E.B.
On bare ground.

Helotium Fr.
H. terrigenum Cke. E.B.
On bare ground.
H. citrinum (Hedw.) Fr. E.B.
On dead wood.
H. flavum (Klotsch.) Phil. A.W.
On decorticated wood.
H. uliginosum Fr. E.B.
On dead twigs in swamp.
H. moniliferum (Phil.) Mass. A.W.
On dead wood with the conidial condition.
H. cyathoideum (Bull.) Karst. E.B.
On decaying herbaceous stems.
H. scutulum (Pers.) Karst. E.B.
On decaying herbaceous stems.
H. herbarum (Pers.) Fr. A.W.
On decaying herbaceous stems.
H. epiphyllum (Pers.) Fr. A.W.
On dead leaves.
H. fagineum (Pers.) Fr. A.W.
On decaying hazel nuts.
H. conigenum (Pers.) Fr. E.B.
On fir cones.

Cyathicula DeNot.
C. coronata (Bull.). E.B.
On dead herbaceous stems.

Chlorosplenium Fr.
C. æruginosum Œd. L.W.

Mollisia Fr.
M. cinerea (Batsch). E.B.
M. fusca (Sacc.) Mass. M.

Pseudopeziza Fckl.
P. fenesueda (Tul.) Mass.

Dasyscypha Fr.
D. nivea (Hedw.) Mass. A.W.
D. acutipila (Karst.). E.B.
On decaying grass stems.
D. Soppitti Mass. M.
On dead oak leaves.
D. hyalina (Pers.) Mass. E.B.
On dead wood.
D. calycina (Schum.). E.B.
On larch twigs.

Belonidium M.&D.
B. pruinosum (Jerd.) Mass. E.B.

Erinella Sacc.
E. apala (B.&Br.). E.B.
On dead Juncus.

ASCOBOLACEÆ.

Ascophanus Boud.
A. granuliformis (Crouan). E.B.
On cow dung.
A. equinus (Müll.). E.B.

Ascobolus Pers.
A. furfuraceus Pers. E.B.
Common on cow dung.
A. atro-fuscus Phil.&Plow. E.B.
On charred ground.
A. immersus Pers. E.B.
On cow dung.

BULGARIACEÆ.

Leotia Hill.
L. acicularis Pers. L.W.

Orbilia Fr.
O. leucostigma Fr. A.W.
O. auricolor (Blox.). E.B.
O. luteo-rubella (Nyl.) Karst. E.B.
All three on dead wood.

Coryne Tul.
C. sarcoides (Jacq.). E.B.
On dead wood.
C. aquatica Mass.&Crossl. E.B.
Among moss on partially submerged boulder in the river Esk.

PHACIDIACEÆ.

Trochila Fr.
T. ilicis Crouan. E.B.
On dead holly leaves.

Rhytisma Fr.
R. acerinum Pers. E.B., L.W., A.W.
Common on sycamore leaves.

PHYCOMYCETÆ.

MUCORACEÆ.

Mucoreæ.

Syzygites Ehrb.
S. megaloacarpus Ehrb. (=Sporodinia aspergillus Schrœt.). A.W.
On decaying Agaric.

Pilobolus Tode.
P. crystallinus Tode. E.B.
Common on cow dung.

CYSTOPODACEÆ.

Cystopus Lév.
C. candidus Lév. E.B.
On Capsella.

PERONOSPORACEÆ.

Phytophthora DeBary.
P. infestans DeB. E.B.
On potato leaves.

DEUTEROMYCETÆ.

SPHÆRIOIDACEÆ.

Phyllosticta Pers.
P. violæ Desm. E.B.

HYPHOMYCETÆ.

MUCEDINACEÆ.

Cylindrium Bon.
C. flavo-virens Bon. M.
On fallen oak leaves.
Botryosporium Corda.
B. diffusum Corda. E.B.
On dead branch.
Penicillium Link.
P. glaucum Link. E.B.
On decaying Agaric.
Botrytis Mich.
B. vulgaris Fr. E.B.
On dead herbaceous stems.
Ramularia Unger.
R. calcea Ces. E.B.
On ground-ivy leaves.

DEMATIACEÆ.

Torula Pers.
T. herbarum Link. E.B.
On dead herbaceous stems.
Cladosporium Link.
C. herbarum Link. E.B.
On dead herbaceous stems.

STILBACEÆ.

Stilbum Tode.
S. fimetarium B.&Br. E.B.
Common on rabbit dung.

Isaria Pers.
I. farinosa Fr. E.B.
I. brachiata Schum. E.B.
On decaying Agaric.

TUBERCULARIACEÆ.

Ægerita Pers.
Æ. candida P. E.B.

MYXOMYCETÆ.

Physareæ.

Badhamia Berk.
B. utricularia B. E.B.
Pendant from a fallen rotten branch.
Physarum Pers.
P. nutans P. E.B.
Craterium Trent.
C. leucocephalum (Pers.) Ditm. E.B.
On leaves, etc.

Didymieæ.

Didymium Schrad.
D. serpula Fr. E.B.
D. nigripes Fr. E.B.

Heterodermeæ.

Cribraria Pers.
C. macrocarpa Schrad. E.B.

Tricheæ.

Trichia Hall.
T. fragilis Rost. E.B.

Arcyrieæ.

Arcyria Hill.
A. punicea Pers. E.B.
On rotten wood.
A. nutans Grev. (=A. flava Pers.). M.
On rotten wood.

NOTES on GEOLOGY.

Landslip at Withernsea.—A landslip occurred at Withernsea early in July, at the north end of the village, carrying away part of some farm buildings.—T. SHEPPARD, Hull, 22nd July 1902.

Deep Well at Lincoln.—A well is now being constructed at Lincoln which will be over 2,000 feet deep when completed, and should add to our knowledge of the underground geological structure of Lincolnshire. T. SHEPPARD, Hull, 22nd July 1902.

NOTES on MOLLUSCA.

***Limax cinereo-niger* in North Lancashire.**—On the evening of 6th September my wife called my attention to a fine slug of uncommon colour, on the roadside between Water Yeat and Lake Bank. It turned out to be the above species. On referring to Adams' 'Shells,' ed. 2, 1896, p. 198, I found that at that date it was not on record for V.C. 69, and I do not know if it has been chronicled previously to this for the Lancashire portion of the vice-county.—S. LISTER PETTY, Ulverston, 6th October 1902.

Shells at Hornsea Mere.—On the excursion of the Hull Scientific and Field Naturalists' Club to Hornsea on 30th August, a section exposed during the erection of a new gasometer at the Hornsea Gasworks was examined. This is situated near the railway station, some little distance from the Mere. The excavation had been made through beds of gravel, shell marl, and peat, which showed that the Mere had formerly occupied this area. From the marl the following shells, identified by Mr. Petch, B.Sc., were collected:—*Sphærium corneum, Pisidium fontinale,* Valvata piscinalis, V. cristata,* Bithynia tentaculata, Limnæa peregra, L. auricularia,** and *Planorbis albus.** The four marked with an asterisk (*) are additions to the list from a similar deposit at Hornsea, given in Reid's 'Geology of Holderness,' p. 82.—T. SHEPPARD, The Museum, Hull, 6th September 1902.

NOTES on METEOROLOGY.

Remarkable Sunsets in Yorkshire.—For several evenings, but particularly on 17th July, Yorkshire people have experienced most beautiful sunsets. These have been connected with the recent eruption in the West Indies, which filled the atmosphere with minute particles of volcanic dust.—T. SHEPPARD, Hull, 22nd July 1902.

Waterspout at Cottingham, East Yorkshire.—A waterspout burst over Cottingham, near Hull, during the morning of 17th July. According to the 'Eastern Morning News,' the clouds, which assumed a tortuous conical shape, rotated rapidly towards the earth. The phenomena lasted several minutes, and then the spout commenced to grow shorter and shorter, until it disappeared altogether.—T. SHEPPARD, Hull, 22nd July 1902.

NORTHERN NOTES and NEWS.

A Condor (*Sarcorhamphus gryphus*), brought sixteen years ago as a nestling from the Chilian Andes, has recently laid an egg at the Natural History Museum, Newcastle-on-Tyne.

Mr. J. R. Mortimer, the Driffield antiquary, is about to publish the results of his forty years' diggings amongst the Ancient Britons. All the important 'finds' will be illustrated from drawings by Miss Mortimer.

In the House of Commons on the 15th July Sir John Leng asked whether any record had been kept of the loss of land on the Holderness coast, and whether any measures had been taken to arrest the changes affecting the navigation of the Humber. In reply it was stated that no official record was kept, and that attention was given to the protection of Spurn Point.

Mr. J. W. Wilson, F.R.H.S., of South Cave, has printed two pamphlets for private circulation, viz.: 'The Economic Properties of *Agave americana* (the American Aloe),' and 'The Chrysanthemum: its History and Development.' The latter was read to the Hull Scientific and Field Naturalists' Club last November.

NOTES on REPTILES.

Grass Snake near Hull.—During the last few years Grass Snakes (*Tropidonotus natrix*) have been very numerous in Holderness, particularly in the district immediately east of Hull. A very fine specimen, caught at Kelsey Hill by Mr. J. W. Boult, has been placed alive in the Hull Museum, where it is a source of attraction.—T. SHEPPARD, Hull, 15th July 1902.

The Grass Snake in the Hull Museum has recently cast its skin. The entire skin was gradually stripped, commencing at the head, and the process occupied two days. The snake has also laid seven eggs—two on 4th August, one on the 8th, one on the 13th, and the remainder at intervals of about a week each. The eggs are nearly an inch long and are of a cream colour. They have a tough cuticle instead of the ordinary egg shell.—T. SHEPPARD, Hull, 14th August, 1902.

Lizard in Lancashire (Vice-Counties 60 and 69).—Macpherson ('Fauna of Lakeland,' p. 462) gives only one localised record for the occurrence of *Lacerta vivipara* Jacq., and that is in Westmorland, near Tebay. The animal is said by him to be plentiful. It may on the warm moors, but it so happens that I have not been so fortunate as to see many. Last year one crossed the road in front of me near Newland Trough, outside Ulverston, and the other day one was on the stones of the stile at the bottom of the hill between Bank and Burton Wells, Silverdale.—S. L. PETTY, Ulverston, 9th July 1902.

Living Toads in Solid Stone.—I was told by a friend the other day that the sexton at his church had found a yard deep, while digging a grave, a flower-head 'like a knur,' and in good preservation, which proved to be that of the Globe Thistle. Feeling incredulous—I suppose I looked so—when my friend said, in answer to my thoughts, 'the sexton *knew* it *was* so, because he threw it out with the earth.' That both were perfectly sincere I had no doubt, but I knew, of course, that (as they stated it) it was impossible. On inquiry, I found that a 'mate' had slipped the flower-head into the sexton's pocket, in order to 'have him on,' and he 'reckoned' it had fallen out while he was digging. Here, thought I, is a parallel to the 'living toad' story. The flower-head is the toad; the sexton is the finder thereof; the friend is the one who tells what the finder has found, both fully believing what they state, but (having no scientific training) mistaken. The finding of an undecayed thistle-head a yard deep in undisturbed earth is as well authenticated as the finding of a living toad in a solid block of carboniferous sandstone, neither more nor less. When one has seen a *dead* toad under such circumstances, it will be quite soon enough to expect to see a *living* one. The head of the Globe Thistle (*Echinops sphærocephala*) is, however, an interesting example of Linnæus' Class Syngenesia, Order Polygamia segregata, each floret having a separate involucre, or (more scientifically expressed) 'numerous one-flowered capitula collected into one large spherical head.'—W. FOWLER, Liversedge, 22nd September 1902.

NORTHERN NOTES and NEWS.

It is reported that two slight earthquake shocks occurred at Cheadle, Cheshire, on the 8th July.

Mr. C. S. Eccles (Hull) has issued a 28 pp. pamphlet dealing with the 'History of the Springhead Waterworks,' from which Hull's water supply is obtained.

The Rev. M. C. F. Morris, Rector of Nunburnholme, has written a valuable pamphlet of 32 pages on 'The Vowel-Sounds of the East Yorkshire Folk-Speech.'

NOTES on LEPIDOPTERA.

Death's Head Moth in Furness.—On either the 1st or 2nd of October I heard of a Lindal Moor miner who had a 'singing butterfly.' On getting hold of him in the evening the insect, which was in a tin box and making a great noise, turned out to be *Acherontia atropos*. Seemingly the moth was in decent condition, but its owner would not allow it to be taken out of the box. It was caught on Lindal Bank, Lindal-in-Furness. I am told a few were heard of last year.—S. L. PETTY, Ulverston, 6th October 1902.

***Sesia sphegiformis* at Bishop's Wood, Yorkshire.**—In connection with the proposed supplement to the 'List of Yorkshire Lepidoptera,' Mr. F. Emsley, jun., of Leeds, recently sent me for examination a fine specimen of this Moth, which he took 'on an alder leaf' in Bishop's Wood, near Selby, 1st July 1894. The only previous county record for the species was that of a specimen taken at York many years ago, the locality of which (Langwith) is now destroyed.—GEO. T. PORRITT, Crosland Hall, near Huddersfield, 10th October 1902.

***Sphinx convolvuli* and *Vanessa io* near Spurn.**—I had brought me by two boys on 15th August a specimen of *Sphinx convolvuli*. After telling them what it was we let it go. A Sparrow on the house-top must have been watching us, for, as soon as we let it go, it flew after the moth, and, in spite of our running and shouting, it flew with it over a wall to enjoy its prey. Another *S. convolvuli* was seen in the garden last week. These are the only two I have heard of this season about here.

We have had a good many Peacock Butterflies (*Vanessa io*) of late about here. It is some years since I have seen them in my garden.—PHILIP W. LOTEN, Easington, 13th September 1902.

***Zeuzera æsculi* and other Lepidoptera near Caistor, Lincolnshire.**—On the 13th August I caught a beautiful example of *Zeuzera æsculi*, 3¼ inches in length. It was laying eggs when I caught it. I saw another two days later.

On the 15th August I caught a Common Footman (*Lithosia complanula*).

Last year I caught two examples of the Small Elephant Hawkmoth (*Chærocampa porcellus*) on the Syringa trees.—F. W. SOWERBY, Cuxwold Hall, Caistor, Lincolnshire, 19th August 1902.

The occurrence of *Zeuzera æsculi* is interesting; the insect appears to have been unusually common this year, quite a number having occurred in the Barnsley district.—G. T. PORRITT.

NORTHERN NOTES and NEWS.

'Lincolnshire Spiders' is the title of a pamphlet issued by the Grimsby Naturalists' Society. It is a reprint of Mr. A. Smith's paper in 'The Naturalist,' and is interleaved.

'Pigmy Flint Implements from the Sand Beds at Scunthorpe in Lincolnshire' is the title of a paper by the Rev. R. A. Gatty, printed in abstract in 'Man' for February last. Several small flint flakes are figured and described, but whether these are evidence of a Pigmy race of people is another matter. There is certainly not the slightest evidence of such a race in England.

In the transactions of the Yorkshire Dialect Society, Part 4, 1902, just published, our enthusiastic contributor, Mr. C. Crossland, F.L.S., has a most important contribution on 'Some Place-Names in the Parish of Halifax, considered in relation to surrounding Natural Features.' In this, Mr. Crossland reveals ability of observation such as could only be acquired by a naturalist. No fewer than 1,300 place-names have reference to the natural inequalities of the surface in the parish of Halifax.

8 NOV. 1902

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CAPITALISATION OF SPECIFIC NAMES.—Hitherto the rule of 'The Naturalist' has been the Zoological one, that specific names shall invariably commence with a small letter, never with capitals. Henceforth this rule will still apply to all Zoological names, but in deference to the wishes of our botanical contributors the specific names of plants will conform in this respect to the standard catalogue or monograph in each branch of botany.

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Yorkshire Naturalists at Bawtry.—H. H. CORBETT, M.R.C.S.
Lincolnshire Naturalists at Scunthorpe.—Rev. E. A. WOODRUFFE PEACOCK, F.L.S.
Additions to Sphagna of Yorkshire.—WM. INGHAM, B.A.
Yorkshire Bryological Committee—Report for 1901.—J. J. MARSHALL.
The Pollard Willow, Bottesford.—MAX PEACOCK.
'Instinct': Presidential Address to the Lincolnshire Naturalists' Union.—Rev. ALFRED THORNLEY, M.A., F.L.S., F.E.S.
Durham Diptera, a Preliminary List.—Rev. W. J. WINGATE.
The Modern Method of Studying Agarics.—GEO. MASSEE, F.L.S.
Economic Fungi.—J. H. HOLLAND, F.L.S.
Distribution of *ypochæris maculata*.—ARTHUR BENNETT, F.L.S.
New and Additional Localities for West Yorkshire Plants.—LISTER ROTHERAY.

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DECEMBER 1902.
(Published 1st December 1902.)

No. 551.
(No. 329 of current series.)

THE NATURALIST:

A

MONTHLY JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND.

EDITED BY

WM. DENISON ROEBUCK, F.L.S.,

259, Hyde Park Road, Leeds;

WITH THE ASSISTANCE IN SPECIAL DEPARTMENTS OF

J. GILBERT BAKER, F.R.S., F.L.S.,

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CAPITALISATION OF SPECIFIC NAMES.—Hitherto the rule of 'The Naturalist' has been the Zoological one, that specific names shall invariably commence with a small letter, never with capitals. Henceforth this rule will still apply to all Zoological names, but in deference to the wishes of our botanical contributors the specific names of plants will conform in this respect to the standard catalogue or monograph in each branch of botany.

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DISTRIBUTION OF *HYPOCHÆRIS MACULATA* IN ENGLAND.

ARTHUR BENNETT, F.L.S.,
Croydon.

In England in former days this plant was much confused with maculate *Hieracii,* as notes by S. Gibson (Phytologist, 1, 741, 1843), and H. C. Watson (l.c., 841-1138) will show. In Hudson's time (1798) the 'Devil's Ditch and Burnach Heath, Northampton,' were the only stations given, and as late as 1849 we find H. C. Watson (Cyb. Brit., 2, 40, 1849) writing 'I make no doubt that the greater number of localities recorded for this plant are wide errors, through mistaking the maculate varieties of *Hieracium murorum,* and probably other species, for the present plant.' He there only records Suffolk, Cambridge, and Carnarvon; but in 1852 (Cyb. Brit., 3, 451) he allows that Cornwall and Essex must be added. The counties now known are 1. Cornwall W.!, 16. Essex N.!, 26. Suffolk W.!, 29. Cambridge!, 32. Northampton!, 49. Carnarvon!, 53. Lincoln S.!, and 69. Lake-Lancashire.! Of these it is probably existent in all except the second and fifth.

Hypochæris maculata Linn. Sp. pl., ed. 1, 2, 810, 1753.

Achyrophorus maculatus Scop. Fl. Carn., No. 4, 986, 1753.

β. ***minor.*** N. E. Forsall, Bot. Notiser, 34, 1844.

The single headed small form.

γ. ***Muelleri*** Lange (*Leontodon hirtum* Müll., Fl. Dan., t. 901, 1787). Hanb. Danske Fl., ed. 3, 584, 1864.

With pinnatifid leaves, leafy stem and several flower-heads.

Eng. Bot., ed. 1, t. 225; ed. 3, t. 791, the single headed small plant.

English name, Spotted Cat's-ear.

1. Cornwall W.

The Lizard: Hore in Phytl., 163, 1842; Johns. in Herb. Brit. Museum, July 1847! Kynance: Johns. in Herb. Roy. Hist. Soc. Cornwall; R. V. Tellam sp., 1869; W. M. Rogers sp., 1873; W. B. Waterfall sp., 1874; W. Curnow sp., 1878.

16. Essex N.

Bartlow Hills; S. Dale before 1686; E. Forster, 1799; Cumings in Herb. Winch!, 1840; G. S. Gibson, 1861; App. Fl. Essex, 412, 1862. Prof. Boulger writes that he has no knowledge of its being found since 1861. Sought for carefully

1902 December 1.

in 1901, without success; I fear it is gone. These hills are no doubt artificial, i.e., tumuli, but the neighbourhood abounds with rare chalk plants.

26. Suffolk W.

Risby Chalk bank, Sir T. G. Cullum, 1804; Jordan sp., 1876; Cavenham, Lady Blake; Icklingham, Sir J. E. Smith; Hind, Fl. Suff., 219, 1889; Newmarket Heath, Ray, Cat. Pl. Cant. App. 16, 1663.

28. Norfolk W.

Gressinghall, R. Wigham, Add. in Fl. Britt. Fl. Norfolk, p. viii. and 83, 1866, K. Trimmer. No recent record, and the Rev. E. F. Linton saw nothing of it in visits to Gressinghall; but he was unaware of the 'Devil's Ditch' near there, where I suspect it grew.

29. Cambridge.

Gogmagog Hills, Ray, 1663; hillock between Triplow Heath and Foulmire; T. Martyn, Meth. Pl. Cant. nas., 1727; Devil's Ditch, near Reche, Henslow; Devil's Ditch, Winch Herb.!, 21st June 1823; Hildersham Furze Hills, C. C. Babington, West, 1895! Searched for here in 1901 unsuccessfully.

32. Northampton.

Southorpe, Berkeley MS., Watson, Top. Bot., ed. 1, 216, 1873; Southorpe Quarries, June 1878, G. C. Druce sp.; Bernech or Bernach Heath (Ray), Eng. Flora.

49. Carnarvon.

Cliffs above the town of Llandudno, Winch Herb.!, June 1828; rocks at Llandudno, Winch, New Bot. Guide, 240, 1835; Painter sp., 1897; Griffith sp., 1882.

53. Lincoln S.

Highdyke, Leadenham, on the old Roman road, 1896; Woodruffe Peacock sp., Naturalist, 169, 1897.

69. Westmorland.

Between Kendal and Ambleside, Woodward. Not been confirmed.

Lake-Lancashire.

'Limestone cliffs of the steep west face of Humphrey Head; said to be plentiful by Mr. Hall,' Withering, Arr. Brit. Pl., ed. 3, V. 3, 691, 1796.

Dr. Windsor, 23rd June 1857; 21st June 1861; Phyt., 257, 1857; 260, 1861; Dr. M. Hind, 20th July 1870 (22 inches high

and two headed), Herb. Brit. Mus.!; 'Now nearly or quite extinct,' Baker, Lake Flora, 121, 1885; see Naturalist, Petty, 101, 1876; W. R. Nash, 1885, J. of Botany, 330, 1885; gathered in 1902 by Mr. A. Wilson (sp.) who 'saw many other specimens in inaccessible situations.'

JERSEY.

Sea-cliffs, St. Ouen's, July 1872, Piquet sp.; 'still there in 1900,' Lister in litt.

Other reputed counties:—

4. DEVON N.

Lynton, Ravenshaw; but see Phyt., N.S., 4, 248, 1859; Ilfracombe, Phyt., N.S., 1, 437, 1855-6.

9. DORSET.

Not noticed by Mr. Mansell-Pleydell in his Fl. Dorset, ed. 1, 1874; or ed. 2, 1895.

15-16. KENT.

Watson, Outl. Geog. Dist. Brit. Pl., 184, 1832; not noticed in the Flora of Kent, p. 218, 1899.

17. SURREY.

Watson, l.c. Probably on the authority of Mr. Graves, of Edinburgh, see p. xii., l.c. Not known as a Surrey species.

33. GLOUCESTER E.

'In the meadows at Swindon,' Buckman, Bot. Guide to Cheltenham, 50, 1844; 'No such plant is in the Gloucester Herbaria,' Coley in litt. As Buckman does not give *H. radicata*, it was perhaps that species.

64. YORK MID W.

A maculate *Hieracium* was so named here.

70. CUMBERLAND.

Keswick, Hutton, Bot. Guide, 158, 1805; not noticed by Baker, Lake Flora, 121, 1885; or Hodgson, Fl. Cumberland, 189, 1898.

90. FORFAR.

Dry woods to the East of Forfar, G. Don. No confirmation.

First record: '*Hieracium montanum caule aphyllo non ramosa flore pallidiore,*' Ray, Cat. Pl. Cantab. Nas. App. 1, 6, 1663.

'On Gogmagog Hills and Newmarket Heath,' Clarke, First Rec. Brit. Fl. Plants, ed. 2, 84, 1900. Reported for Ireland in 'Contrib. towards a Flora of Tyrone, Londonderry, and

Donegal,' in MS. Mag. of Glasgow Nat. Soc., No. 3, July 1862. Not noticed by Cyb. Hib., ed. 2, p. 211, 1898; or R. L. Praeger in Irish Top. Bot., 198, 1901; or by H. C. Hart in Fl. Donegal, 191, 1898.

DISTRIBUTION IN EUROPE.

Norway, Sweden, Denmark, Finland, Lapland, France, Belgium, Holland, Germany, Switzerland, N. Italy, Austria, Dalmatia, Croatia, Hungary, Poland, Transylvania, Servia, Bosnia, Russia.

ASIA.

Caucasus, Siberia, Davuria?

NOTE on CRUSTACEA.

Large Crab at Withernsea.—A Crab weighing over 5 lbs. was caught at Withernsea on 17th July. This is the largest specimen caught at Withernsea within the memory of any of the inhabitants.—T. SHEPPARD, Hull, 22nd July 1902.

NOTE on TIDAL PHENOMENA.

Big Waves on the Yorkshire Coast.—It appears that now and again a wave of extraordinary volume occurs upon the Yorkshire coast, immensely larger than any which go before or follow it. I have made a note of several such waves in recent years. The most notorious example is the wave which, on 13th October 1873, swept Mr. and Mrs. Paget off the rocks just north of Filey Brigg. A tablet inserted in the cliff records that 'the spot in question is rarely covered at high tide, and at the time of the accident it wanted but an hour and a half to low water.'

One Sunday afternoon (again in October), about fifteen years ago, I was standing with the Vicar of Saltburn on Bridlington Pier near the Victoria Rooms. A gentleman came on to the pier and leant upon the iron rail, looking down on the water. Immediately a huge wave reared itself right on to the place where he stood, and, but for the support of the rail, must have swept him away. When the water ran off the pier, a number of live Swimming Crabs (*Portunus depurator*) were left behind, a striking testimony to the depth of the water hurled up. No wave before or after even cast spray on this place during that tide.

At the extreme point of Flamborough Head, near the isolated rock called 'Green Stacks,' is a small 'creux' (or roofless cave). Mr. G. W. Lamplugh has told me that one day about twenty years ago, when he was examining the boulder-clays which cap the chalk at this point, a wave of great volume boiled up in this creux to such a height that he was in imminent danger of being carried down by it.

Some eight or nine years ago I saw it reported in a local paper that a lady nearly lost her life in Thornwick Bay. She was sitting on the shore reading, far away from the sea, when she found herself almost swept off by a wave. I myself witnessed an extraordinary wave in the same bay in October 1887.

I have questioned fishermen about these extraordinary waves, and I find their occurrence is quite recognised. They say they only occur when there is a big swell on. The fact that never more than *one* appears to occur on each occasion is very singular, and seems to point to some rare coincidence. The practical lesson seems to be that, if the sea is at all disturbed, it is best to keep a lookout when wandering on the rocks or shore.—W. C. HEY, West Ayton, Yorkshire, 5th September 1902.

YORKSHIRE NATURALISTS AT BAWTRY.

HERBERT H. CORBETT, M.R.C.S.,
Doncaster.

THE report on the 166th meeting of the Yorkshire Naturalists' Union might pretty well have been made by means of a blank sheet. The district for investigation was most promising, and, judging by the official programme, botanists, conchologists, and vertebrate-zoologists should have had a good day; while the entomologists were going to capture long series of the supposed extinct *Nisionades semiargus*. Alas! 'The best laid schemes of mice and men gang aft agley.' *'It rained!'* That is the only remark to be made upon the weather.

The section of members who were to get *N. semiargus* journeyed to Haxey Station, and remained in the waiting-room until a train arrived to take them back to Doncaster. At Haxey they foregathered with a few enthusiasts from the Lincolnshire Union who accompanied them on the return journey.

The Bawtry party, under the leadership of Mr. Jordan, tramped through the soaking rain for some time, but, finding work impossible, they made for Finningley Station and took train to Doncaster.

The Finningley party, led by the present writer, were blessed with two short intervals when it did not rain, during which a little work was possible among insects, molluscs, and plants. They were finally driven from their posts by the incessant downfall, and walked weary miles through mud and water until Doncaster was reached.

All the parties having arrived at the Glyn Hotel at an earlier hour than would have been the case had the day been fine, tea was ordered an hour earlier, and this having been finished, the most pleasant part of the day ensued. Old friends met each other once again, and new acquaintanceships were formed that may develop into old friendships.

Pleasant chat and amusing anecdotes on matters relating to natural history whiled away the time until the formal business of the meeting was due. This was held under the presidency of Mr. G. T. Porritt, F.L.S., an ex-President of the Union. In his remarks he welcomed the members of the Lincolnshire Union to the meeting.

A vote of thanks to the landowners, guides, and all who had contributed to the success of the meeting was proposed by

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Mr. T. Sheppard, F.G.S., seconded by the Rev. E. A. Woodruffe Peacock, F.L.S., Secretary of the Lincolnshire Union, and carried unanimously. Mr. M. H. Stiles, F.R.M.S., replied.

The sectional reports were naturally, on such a day, very meagre.

For the Geological section, Mr. T. Sheppard, F.G.S., its secretary, who officially represented it, writes as under:—By the circular prepared for this meeting, we were warned by Mr. Corbett that the country around Bawtry and extending to Doncaster presented little attraction to the geologists, and, naturally, this somewhat poor prospect did not result in large numbers of hammermen being present. Possibly some of those who had determined to go thought otherwise in view of the incessant rain which fell from the early morning. The geologists included Mr. Corbett, Mr. E. Hawkesworth, and the writer, who took different routes, but each one reported the result of his day's work as nil; and as this result was to a certain extent prophesied, they could hardly be disappointed. The members of the Lincolnshire Naturalists' Union, however (including the Rev. E. A. Woodruffe Peacock, F.G.S., Mr. F. M. Burton, F.G.S., and Mr. H. Preston, F.G.S.), who joined the party at Haxey, had been more fortunate, having visited the site of an exceptionally deep boring a few miles away.

The party adjourned to the Glyn Hotel at an early hour, and a pleasant afternoon was spent in discussing 'stony' subjects. An opportunity of this character amply repaid the members for their trouble in travelling to Doncaster. At the general meeting held after tea it was particularly gratifying to the geologists to propose that the hearty congratulations of the Union be offered to Mr. Alfred Harker, M.A., and Mr. Robert Kidston, F.R.S.E., on their election to the Fellowship of the Royal Society. Both gentlemen are well known to the members of the Union from their sound work on the geology of our greatest county.

For Vertebrate-Zoology Mr. H. H. Corbett reported that little could be done. Birds were hidden from the constant rain. Some Stoats were seen hunting a rabbit, and at Kilham Farm, Cantley, a stuffed Badger, shot on the farm a few years ago, was examined.

For Conchology Mr. Corbett reported that during a short interval of the rain the following species of mollusca were found in the river Torne and a drain near it. *Bythinia tentaculata, Limnea peregra, L. palustris, Planorbis contortus, P. complanatus, P. vortex, P. corneus, Physa fontinalis,* and *Ancylus fluviatilis.*

For Entomology Messrs. Porritt and Hewett reported that nothing could be done among the Lepidoptera.

The Coleopterists, represented by Messrs. Bayford and Corbett, did a little collecting in the Torne and a small amount of 'beating' also, the result being, *Harpalus ruficornis, Pterostichus madidus, Pt. niger, Anchomenus albipes, Calathus cisteloides, Deronectes depressus, Hydroporus pictus, Haliplus ruficollis, H. fluviatilis, Anacæna globula, Coccinella 10-punctata, Rhagonycha limbata, Crepidodera transversa, Deporaüs betulæ, Phyllobius calcaratus, Stophosomus coryli, Rhynchites nanus,* and *Elmis æneus.*

Insects of other orders were submitted to the Rev. Alfred Thornley, M.A., F.L.S., who reported that the Hymenoptera Aculeata were *Gorytes mystaceus* and *Odynerus callosus*; and the solitary Hemiptera-Heteropteron, *Psallus betuleti.*

Other sections reported complete blanks.

Sympathetic reference was made to the death of Mr. A. Paterson, the oldest local member of the Union, and a vote of thanks to the Chairman terminated the meeting.

It is to be hoped that the Union will repeat the excursion at an early date and have better weather, when there can be no doubt that a most enjoyable and valuable day would be spent.

NOTES and NEWS.

We have received from Mr. R. Charles, of Highcliffe, Christchurch, Hants, a suite of Eocene and Oligocene Mollusca from the Paris Basin, which includes 40 different species, all in excellent condition, carefully named and with particulars as to locality and geological horizon. Mr. Charles spares no pains to give satisfaction to his clients, and the great interest of being found in deposits of the same relative age as the Upper Eocene of Barton, the Middle Eocene of Bracklesham Bay, and the Oligocene of Hordwell, as well as the exquisite beauty of form and fine state of preservation, makes this ninth series noteworthy, and we heartily recommend all who are interested to at once give Mr. Charles their patronage.

LINCOLNSHIRE NATURALISTS AT SCUNTHORPE.

Rev. EDWARD ADRIAN WOODRUFFE PEACOCK, L.Th., F.L.S., F.G.S.,
Vicar of Cadney; Organising and Botanical Secretary, Lincolnshire Naturalists' Union.

The wet day on the 10th July ruined the Joint Meeting of Yorkshire and Lincolnshire Naturalists at Doncaster and Epworth. With the 11th came fine weather for the Scunthorpe meeting, but Yorkshire was only represented by one of the Secretaries of the Union, Mr. W. Denison Roebuck, F.L.S. Considering

the unsettled state of the weather, the Lincolnshire men turned out in goodly numbers and did a fair day's work, Grantham, Lincoln, Boston, and Louth all providing members.

Mr. H. Preston, F.G.S., reported the geology shortly for the time being as follows :—This section, which in the unavoidable absence of Mr. F. M. Burton, F.G.S., was led by Mr. Preston, made tracks for the ironstone quarries. The main object of the visit was to examine the ironstone and its adjacent clays, and to add to the recorded list of fossils made two years ago from the Ironstone or Semicostatus Zone of the Lower Lias ; and also to see the ' Stone Curtain,' which was not reached on the previous occasion. Some length of time was spent in the pits, where most of the old fossil types were noted, and some good examples collected. A fine specimen of *Hippopodium ponderosum* was found at the top of the ironstone bed. This species, although recorded in the Geological memoir for the district (sheet 86), had not been seen on our previous visits. Rock specimens also were found showing the beautiful oolitic structure occasionally seen in this ironstone. A good specimen of an ammonite having the transversely plaited keel (*Amaltheus margaritatus*?) was obtained from a concretionary nodule lying in the clay immediately over the ironstone. The typical ammonite for the Middle Lias (*A. margaritatus*) is particularly rare in this district, and therefore has not been used as a zonal type by the geological surveyors in assigning the upper limits of the Lower Lias. After examining some of the faults occurring in these beds, and the fused appearance of the fault-rock, the party proceeded to that most interesting of tufaceous deposits, the ' Stone Curtain.' Some little time was spent here examining the structure and discussing the probable origin of the gutter which runs along the top of the mound. Mr. Charles S. Holgate, not the least active member present, stated that he well remembered the time when the spring issued above the top end of the mound and formed a treacherous bog, when limewater almost invariably flowed down the natural formed gutter on the top. Mr. Holgate can remember it eighty years, long previous to the land being drained and the spring being conducted down to its present outlet over the cattle-trough, a little distance south of the ' curtain.' Several of the party being greatly interested in ' Early Man ' as well as Geology, the opportunity was taken to return to the town by way of the sand moors, some of which have been so prolific in their yield of flint and bronze implements of Neolithic and the so-called Pigmy man age. Many flint flakes were

found, and one extremely good leaf-shaped arrow-head was picked up. Returning from a most successful and interesting ramble, full duty was done to the excellent tea provided, after which Mr. Cobban, the local water engineer, handed to Mr. Preston some further particulars of the recent boring for water, which will appear in a subsequent issue.

Miss S. C. Stow acted as botanical secretary as usual, and reported 216 species and varieties. In so well worked a district nothing new turned up, and some 'old familiar friends' were not seen; perhaps 'they are gone for ever.' *Diplotaxis muralis, Sisymbrium Sophia,* and *Linaria viscida* were conspicuous on the viaduct embankment. *Viola palustris, Stellaria palustris, Drosera rotundifolia* only, *Cnicus palustris* and its variety *flore albo, Cnicus pratensis,* extremely robust specimens of *Crepis virens,* the *flore roseo* variety of *Prunella, Potentilla palustris,* with *Epipactis palustris, Orchis maculata* and its variety *flore albo, Eriophorum angustifolium, Scirpus setaceus,* and *Carex flava* in abundance, were taken in the viaduct delph on Brumby West Common. The Liassic loamy roads or æolian sand supplied *Lychnis dioica, flore rosante, L. Githago, Sagina procumbens; S. apetala,* on wall tops at Frodingham; *Genista anglica,* where I first saw it just forty years ago, *Asperula odorata, Arctium majus, Centaurea Cyanus, Lithospermum officinale, Allium oleraceum, Aira caryophyllea, Deschampsia flexuosa, Poa nemoralis,* either very rare or always passed over, as is *Agropyron caninum,* which was taken by Brumby Woodside.

In Miss S. C. Stow's words:—The list of mosses contains 38 species, some of which are rather good ones.

On walls in Frodingham village, Div. 2:—

*Grimmia pulvinata Sm.
*Tortula muralis Hedw.
Barbula unguiculata Hedw.
*Bryum cæspitosum L.
*Bryum argenteum L.

On Brumby West Common, with marsh and moor ground by the viaduct:—

Sphagnum cymbifolium Ehr.
*Sphagnum subsecundum Nees.
*Catherinea undulata W.&M.
*Polytrichum aloides Hedw.
*Polytrichum juniperinum Willd.
Polytrichum formosum Hedw.
Ceratodon purpureus Brid.
Dicranella heteromalla Schp.
Dicranum scoparium Hedw.
*Fissidens bryoides
*Funaria hygrometrica Sibth.
Aulacomnium palustre, Schwgr.
Webera nutans Hedw.
*Bryum bimum Screb. New to N. Lincs.
*Bryum capillare L.
*Mnium rostratum Schr.
Mnium undulatum L.
Brachythecium albicans B.&S.
Brachythecium rutabulum B.&S.
*Brachythecium velutinum B.&S.
*Brachythecium purum Dixon.

Eurhynchium prælongum B.&S.	Hypnum cupressiforme L.
*Plagiothecium denticulatum B.&S.	*Hypnum stramineum Dicks.
*Amblystegium serpens, B.&S.	*Hypnum cordifolium Hedw.
Amblystegium filicinum DeNot.	Hypnum cuspidatum L.
*Hypnum fluitans (group Rotae) var. falcifolium Ren.	Hypnum Schreberi Willd.
New to Lincs.	*Hylocomium splendens B.&S.
	Hylocomium squarrosum B.&S.

Those marked with the asterisk (*) are new to Div. 2.

Two Hepatics were taken:—*Lophocolea bidentata* L. on the lane between Scunthorpe and the viaduct, and *Marchantia polymorpha* near the viaduct. The geologists took some beautiful specimens of the *Marchantia*, showing fructifications and gemmæ, from an old disused face of ironstone in the Lindsey Ironstone Quarry at Scunthorpe.

The only lichen taken was *Peltigera canina* on the lane between Scunthorpe and the hill-top before the viaduct.

The Rev. W. Fowler says:—The only fungus worth mentioning in the report was a fine clump of *Panus conchatus* Fr.

Mr. C. S. Carter, M.C.S., reported that the Conchological Section was represented by its President (Mr. W. Denison Roebuck, F.L.S.) and Secretary (Mr. C. S. Carter, M.C.S.), who were conducted by the Organising Secretary. A start was made along the road going westward towards the viaduct, where the reddish variety of *Helix cantiana* was found to be common. None of the typical form were found. The most interesting shell found in this road was one of *H. hispida,* which was approaching a scalariform monstrosity, and Mr. Lionel E. Adams' remark ('Collectors' Manual,' p. 79) 'I think it may be stated that wherever *H. rufescens* is found there will *H. hispida* be found also, *though the converse is by no means true,'* was substantiated, for, while *H. hispida* was common, not a single *H. rufescens* was found. Reaching the escarpment, a turn was made into the wood on the right hand, where a fine dark example of *Limax maximus* was taken, also *Arion minimus,* one specimen of *Helix arbustorum* and two of *Cochliocopa lubrica* var. *fusca.* Returning to the road, we proceeded to the viaduct, where in a small stream were found *Limnæa peregra, Limnæa truncatula,* and *Bythinia tentaculata.* From here we proceeded to the railway embankment, where our best find of the day was made—a living specimen of *Cæcilioides acicula.* This is the first time it has been taken alive in the county. A dead shell of *Hyalinia fulva*; *Helix caperata* was very fine and its var. *ornata* common. It was noticeable that this species was somewhat partial to Ants' nests, a great

number being found therein. The only representative found of the Sphæriidæ was *Pisidium pusillum,* taken from a shallow pond by the side of the embankment.

The following is a complete list of species and varieties noted in Scunthorpe parish :—

Arion ater.
Arion minimus.
Arion hortensis.
Limax maximus.
Agriolimax agrestis.
Agriolimax agrestis var. sylvatica.
Vitrina pellucida.
Hyalinia cellaria.
Hyalinia cellaria var. complanata.
Hyalinia nitidula.
Hyalinia crystallina.
Hyalinia fulva.
Helix rotundata.
Helix aspersa.
Helix nemoralis.
Helix arbustorum.
Helix cantiana var. rubescens.
Helix hispida.
Helix hispida var. hispidosa.
Helix hispida var. subrufa.
Helix caperata.
Helix caperata var. ornata.
Helix pulchella var. costata.
Pupa muscorum.
Clausilia bidentata, and a young shell in moss on the top of a wall in Frodingham village.
Cochlicopa lubrica var. fusca.
Cæcilioides acicula.
Carychium minimum.
Limnæa peregra.
Limnæa truncatula.
Bythinia tentaculata.
Pisidium pusillum.

For Entomology the Rev. Alfred Thornley, M.A., F.L.S., reported that the day was cool but kept fine; nevertheless, the great rain of the day before had evidently driven away the insects, as the number taken was far too low for such a magnificent district. The best find, he thought, was the beautiful little Noctua, *Hydrelia uncula,* which was not at all uncommon on the heath, and several specimens were taken. Several young Kitten larvæ were taken on *Salix repens* which he thinks were *D. furcula*, but he forgot to bring away a specimen. It was very interesting to capture a specimen of the Wood Tiger (*Nemeophila plantaginis*) so late as this, as it usually flies in May, but this only shows once more how late the season is. Very few butterflies were observed, and this was very disappointing, as the search for the long-lost *Lycæna acis* the day before at Epworth was rendered abortive by the exceedingly wet weather. Only a single specimen of that very common Dragon Fly—*Agrion puella,* was observed in the pond; it was a sore puzzle what had become of the rest in so likely a locality for their occurrence.

The beetles scarcely call for comment, and the same must be said of the Diptera. The little and very pretty fly, *Nemotelus uliginosus,* swarmed on Umbelliferæ in the bog; and one example of *Chrysotoxum bicinctum,* a common fly hereabouts, which mimics an *Odynerus* wasp, was taken. Several specimens of the robber fly, *Dysmachus trigona,* were seen and caught. But the

cool wind evidently kept the insects in hiding, as only in very sheltered places did they resort to flowers. Bugs (*Hemiptera*) were strangely absent, though several immature forms were noticed. The grasshoppers were still very small and undeveloped.

At Gainsborough, on the day preceding, the larvæ of the Mullein Shark Moth (*Cucullia verbasci*) were found feeding not only on *Verbascum*, but also on *Scrophularia aquatica*.

Lepidoptera.—The only butterflies seen were the Common Blue (*Lycæna icarus*), the Small Heath (*Cœnonympha pamphilus*), the Meadow Brown (*Epinephele janira*), and the Common Skipper (*Hesperia sylvanus*). In addition, the following moths were picked up :—

Zygæna filipendulæ. Common.
Euchelia jacobeæ. Larvæ.
Nemeophila plantaginis. A worn ♀.
Plusia gamma.
Plusia chrysitis.
Hydrelia uncula. Several on the heath, climbing up the stems of grass.
Agrotis segetum.
Leucania lithargyria.
Dicranura furcula (?). Several young larvæ, most probably of this species, feeding on *Salix repens*.
Bupalus piniarius. Flying freely in the pine-woods.
Panagra petraria.
Cabera exanthemata. Larvæ.
Trachea piniperda. Larvæ.

Coleoptera.

Cicindela campestris.
Pterostichus striola.
Harpalus rubripes. A small and singular variety.
Amara apricaria.
Agabus guttatus.
Agabus paludosus.
Hydroporus pubescens.
Hydrobius fuscipes.
Telephorus bicolor.
Luperus niger.
Cyphon coarctatus.
Athous niger.

Hymenoptera.

Gorytes mystaceus.
Crabro cribrarius. ♀.
Crabro dimidiatus. ♂.
Odynerus spinipes. ♂.
Halictus villosulus.
Selandria serva.

Diptera.

Volucella bombylans.
Volucella pellucens.
Chilosia œstracea (illustrata).
Syrphus ribesii.
Pollenia rudis.
Sarcophaga carnaria.
Dysmachus trigona.
Leptis scolopacea.
Thelaira leucozona.
Nemotelus uliginosus.
Chrysotoxum bicinctum.
Eristalis arbustorum.
Pachyrrhina maculata.

A few immature Grasshoppers were taken, but it was impossible to determine the species from them; and a single specimen of *Agrion puella*, the common small blue Dragon Fly.

Mr. C. S. Carter reported finding two specimens of Pseudo-Scorpions. One was afterwards unfortunately lost, the other upon examination was found to be the common one, *Chthonius rayii*; they were both taken from under stone on the railway embankment.

ADDITIONS TO SPHAGNA OF YORKSHIRE.

WILLIAM INGHAM, B.A.,

Organising Inspector of Schools, Haxby Road, York.

In the May number of 'The Naturalist' for 1901 I published a list of 'Sphagna of Yorkshire and Durham,' named according to the new system by Warnstorf. This paper gives the Sphagna of Yorkshire only that I have found and determined since May 1901.

To insure strict accuracy Mr. E. C. Horrell, F.L.S., has also kindly examined them. The numbers after the habitats are those of the botanical vice-counties, as explained in my former paper on Sphagna.

I.—SPHAGNA ACUTIFOLIA Schimp.

Sphagnum fimbriatum Wils.

Var. ***tenue*** Grav. By the side of Saltersgate Beck (62), July 1902.

Var. ***robustum*** Braithw. By the side of Saltersgate Beck (62), July 1902.

Sphagnum rubellum Wils.

Var. ***rubrum*** Grav. Among heather, south of Goathland (62), July 1902.

Var. ***versicolor*** Russ. Among heather, three miles south of Goathland (62), September 1902.

Var. ***violaceum*** Warnst. On wet land by Eller Beck, Goathland (62), July 1902.

Sphagnum acutifolium Russ. & Warnst.

Var. ***flavo-rubellum*** Warnst. Among heather, south of Goathland (62), August 1902; by the side of Upper Cross Haw Beck, Baugh Fell (65), August 1902, in deep tufts.

Var. ***versicolor*** Warnst. Among heather south of Goathland (62), September 1902.

Var. ***viride*** Warnst. Among grass by the Strid, Bolton Woods (64), August 1902.

Sphagnum quinquefarium Warnst. By the roadside in a rather dry habitat, Beedale (62), June 1901, the var. *viride* Warnst.

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Sphagnum subnitens Russ.&Warnst.

Var. ***flavescens*** Warnst. On the north-west shoulder of Baugh Fell (65), August 1902, in much deeper tufts than on Strensall Common.

Var. ***flavo-rubellum*** Warnst. On slope of hill, crowded with fruit, south of Goathland (62), September 1902.

Var. ***pallescens*** Warnst. Among heather, south of Goathland, (62), September 1902.

Var. ***versicolor*** Warnst. At the foot of hill, south of Goathland (62), September 1902.

Var. ***violascens*** Warnst. By Saltersgate Beck (62), July 1902, identical with a specimen from Caithness.

Var. ***virescens*** Warnst. Under dripping water in Arncliffe Wood (62), the forma *squarrosula*; also in very deep tufts, over one foot in depth and crowded with fruit, by the side of Saltersgate Beck (62), July 1902.

II.—SPHAGNA SQUARROSA Schimp.

Sphagnum teres Angstr.

Var. ***imbricatum*** Warnst. Among heather on low land south of Goathland (62), August 1902.

III.—SPHAGNA CUSPIDATA Schimp.

Sphagnum recurvum Russ.&Warnst.

Var. ***amblyphyllum*** Warnst. North-west shoulder of Baugh Fell (65), August 1902; also south of Goathland (62), in abundance and partly submerged, August 1902.

Var. ***mucronatum*** Warnst. In Arncliffe Wood (62), September 1901, tall and green; on the north-west shoulder of Baugh Fell (65), the form with equilateral triangular stem leaves; by the side of Saltersgate Beck (62), July 1902, in fruit, which is very rare for *S. recurvum*; and on face of wet rock, Saltersgate Beck, August 1902, reaching nearly two feet in length.

Sphagnum parvifolium Warnst. On the north-west shoulder of Baugh Fell (65), by the Rawthey River, August 1902.

Sphagnum molluscum Bruch. By Saltersgate Beck (62), c.fr., July 1902.

IV.—SPHAGNA RIGIDA Schimp.

Sphagnum compactum DC.

Var. ***imbricatum*** Warnst. Goathland, south (62), August 1902.

Var. ***squarrosum*** Russ. Strensall Common (62), February 1897.

V.—SPHAGNA SUBSECUNDA Schimp.

Sphagnum subsecundum Limpr. On Barmby Moor (61), December 1900.

Sphagnum inundatum Warnst. On Pilmoor (62), completely submerged, and of variegated colour, March 1901; on Sandburn Common (62), a similar colouring to that on Pilmoor, April 1901; south of Goathland (62), partly submerged, and of vivid green and pale brown colour, August 1902.

Sphagnum Gravetii Warnst. A rare Sphagnum; in thick 'iron' water by Taith's Gill on Baugh Fell (65), August 1902; also on high moorland, south of Goathland (62), July 1902.

Sphagnum rufescens Warnst. By the side of the road, south of Goathland (62), a yellow and brown form, July 1902; and on wet low land, south of Goathland (62), all green, and all the branches terete, September 1902.

VI.—SPHAGNA CYMBIFOLIA Schimp.

Sphagnum cymbifolium Warnst.

Var. ***fusco-rubescens*** Warnst. By Taith's Gill, on Baugh Fell (65), associated with the *S. Gravetii*, August 1902; also on wet ground, south of Goathland (62), September 1902.

Var. ***glaucescens*** Warnst. On Pilmoor (62), c.fr., March 1901.

Var. ***glauco-pallens*** Warnst. On Skipwith Common (61), in dry habitat, July 1901; on Pilmoor (62), September 1898.

Var. ***pallescens*** Warnst. On side of Saltersgate Beck, in large masses (62), c.fr., July 1902; on Skipwith Common (61), August 1900.

Sphagnum papillosum Lindb.

Var. ***normale*** Warnst. forma ***conferta*** (Lindb.) Warnst., in fruit, south of Goathland (62), September 1902.

Var. ***sub-læve*** Limpr. On the north-west shoulder of Baugh Fell (65), August 1902; and south of Goathland (62), September 1902.

Sphagnum medium Limpr.

Var. ***glauco-purpurascens*** Russ. A few miles south of Goathland (62), on low wet land, September 1902.

Var. ***purpurascens*** Warnst. South of Goathland (62), on wet land, August 1902.

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NOTES on FLOWERING PLANTS.

***Peucedanum sativum* in Cumberland.**—Referring to Miss Armitt's note in the November number, page 352, as to the finding of this plant at Silloth, in October last, I may add that I found it at the place indicated by Miss Armitt in July 1901, and recorded the fact in the April number of the 'Naturalist' this year, page 129. It is also worth mentioning that the late Mr. Hodgson, of Workington, sent me a specimen of the plant in 1899, which he had found on some ballast at Maryport. In a book of Mr. Hodgson's (now in my possession) there is a note in his own writing against this plant, 'Railway slope near the Armstrong Range, Silloth,' but unfortunately there is no date given, though I have no doubt that that note refers to a 'find' prior to the publication of his 'Flora of Cumberland.'—W. THOMSON, 14, Feversham Crescent, York, 11th November, 1902.

Plants seen in North-East Yorkshire (V.C. 62) in August 1902.—For ten days I was at Robin Hood's Bay and think the following notes may be of interest. I have marked with an asterisk (*) plants not mentioned in Baker's 'North Yorkshire':—

Ranunculus circinatus. At Malton (Dist. 3 of Baker).
**Ranunculus Flammula* var. *repens.* In very good condition at Pilmoor (Dist. 2).
**Papaver Rhœas* var. *Pryorii* (Druce). At Brafferton (Dist. 2) and Cundall (Dist. 8).
Sinapis nigra. At Malton (Dist. 3).
**Spiræa Ulmaria* var. *denudata.* At Mallion's Spout, Goathland (Dist. 4).
**Artemisia vulgaris* var. *coarctata.* Frequent in Districts 4 (Robin Hood's Bay) and 8 (Cundall and Topcliffe).
**Senecio viscosus.* Near Whitby (Dist. 4).
Mentha piperita. Robin Hood's Bay (Dist. 4).
Lamium purpureum fl. albo. At Cundall (Dist. 8).
**Polygonum Convolvulus* var. *pseudo-dumetorum.* Cundall (Dist. 8).

—H. J. RIDDELSDELL, St. Michael's College, Aberdare, 7th Sept. 1902.

***Sedum villosum* at Ingleborough.**—The Rev. Mr. Riddelsdell's remarks on this subject in his paper ('Naturalist,' November 1902, p. 337-342) on 'Plants in the Bicheno Herbarium,' have drawn my attention to the matter. I am able to report that specimens of *S. villosum* L.—rather poor ones, but unquestionable—were gathered at Helln (Alum) Pot in 1894 by my friend Mr. Reginald J. Farrer, of Ingleborough Hall, and are now in my herbarium. Mr. Farrer's full label with them is—'Helln Pot, on Ingleborough, 2nd Sept. 1894.' Found on the same day and in the same ramble as my first specimens of *Arenaria gothica* Fr. R. J. F.'

The Bicheno specimen endorsement apparently gives 'Ingleborough' simply, without any more precise indication of locality. Whether, therefore, it continues the Ray record for (I copy from 'Synopsis Methodica Stirpium Britannicarum: Editio Tertia: 1724') 'on the moist Rocks about *Ingleborough-Hill,* as you go from the Hill towards *Horton* in *Ribbles-Dale,* in a Ground where Peat is got in great plenty,' or Mr. Woodward's authority in the (Old) 'Botanist's Guide' by Turner and Dillwyn—published 1805—'Close by Weathercote Cove,' or whether it represents an independent station does not appear.

The Ray locality is most distinctly connected with the mountain itself, and apparently belongs to its directly eastward slope. Weathercote Cove is near the north-western base of Ingleborough; Helln Pot in a similar position on its north-east. Mr. Bicheno's station may have been one of these, or a similar though not identical one, and still be rightly though vaguely described as 'Ingleborough.' Anyhow, Mr. Farrer's specimens supply, if not an entirely new locality for the species, at any rate confirmation of one which (vide Mr. Riddelsdell's list, and also 'Flora of West Yorkshire') has not been corroborated for at least seventy years.—WILLIAM WHITWELL, Underhill, Lower Hagley, Worcestershire, 17th Nov. 1902.

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